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Symbiosis in Open Innovation: Small Firms' Dance with Large Companies

A qualitative study of the challenges small firms experience when out-licensing to large companies, and how they manage these challenges.

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Sammanfattning

Examensarbetets titel: Symbios i Öppen Innovation: Små Företags Dans med Stora Företag - *En kvalitativ studie om de utmaningar små företag upplever när de ut-licensierar till stora företag, och hur de hanterar dessa utmaningar.*

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Fem nyckelord: Öppen innovation, Licensiering, Asymmetriska Samarbeten, Utmaningar, Hantering

Forskningsfråga: Vilka utmaningar upplever små företag när de utövar öppen innovation genom att utlicensiera till stora företag, och hur hanterar de dessa utmaningar?

Syfte: Uppsatsens syfte är att undersöka de utmaningar som små företag möter när de deltar i öppen innovation genom att utlicensiera till större företag. Dessutom syftar den till att utforska de strategier som de små företagen använder för att bemöta och hantera dessa utmaningar.

Metod: Studien har en kvalitativ expertintervjudesign genomförd med semi-strukturerade intervjuer och en tematisk dataanalys.

Teoretiska perspektiv: Studiens teoretiska bas är tidigare litteratur inom öppen innovation mellan små och stora bolag, licensiering, och resursberoendeteorin.

Resultat: De identifierade utmaningarna är tröghet, självtjänande, kontraktuella bekymmer, ovisshet, begränsat inflytande, begränsad självständighet, partneralternativ, och bristande resurser. Strategierna för att hantera utmaningarna är att navigera exklusivitet, vara strukturerad och professionell, relationsbyggande, förvärv och användning av extern expertis, skapa engagemang, etablera kontrollmekanismer och regleringar, minska beroende och utnyttja unika resurser.

Slutsats: Studien identifierade utmaningar upplevda av det lilla bolaget som grundade sig i egenskaper hos det stora bolaget, interorganisatoriska dynamiker, och egenskaper hos det lilla bolaget. Vidare identifierades sätt att hantera dessa utmaningar, som kan sammanfattas till hårda åtgärder, mjuka åtgärder, samt unika resurser. Studien syftade även till att fylla flertalet litteraturgap gällande open innovation genom licensiering mellan små och stora bolag.

Abstract

Title: Symbiosis in Open Innovation: Small Firms' Dance with Large Companies - *A qualitative study of the challenges small firms experience when out-licensing to large companies, and how they manage these challenges.*

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Keywords: Open innovation, Licensing, Asymmetric Partnerships, Challenges, Management

Research question: What challenges do small firms encounter when engaging in open innovation by out-licensing to large firms, and how do they manage these challenges?

Purpose: The purpose of this study is to explore the challenges that small firms face when engaging in open innovation by out-licensing to larger companies. Additionally, it aims to investigate the strategies that these small firms use to manage the challenges.

Methodology: The study employs a qualitative expert interview design conducted with semi-structured interviews and a thematic data analysis.

Theoretical perspectives: The study's theoretical foundation is based on previous literature on open innovation between small and large companies, licensing, and Resource Dependency Theory.

Result: The challenges identified are inertia, self-serving, contractual concerns, uncertainty, limited independence, limited influence, scarce resources, and limited partner options. The management strategies identified are navigating exclusivity, being structured and professional, leveraging unique resources, relationship building, acquiring and utilizing external expertise, creating commitment, establishing control mechanisms and regulations, and decreasing dependency.

Conclusions: The study identified challenges experienced by small companies, stemming from large firm characteristics, inter-organizational dynamics, and small firm characteristics. Furthermore, ways to manage these challenges were identified, which can be summarized as hard measures, soft measures, and unique resources. The study contributed by filling several literature gaps regarding open innovation through licensing between small and large companies.

Preface

Undertaking this study has been an immensely valuable and fruitful learning experience and we are indebted to the people contributing to this thesis.

First, we extend our thanks to the experts who shared their rich insights into the world of licensing. Without their time, thoughts, and experiences, this thesis would have been a hollow shell containing nothing but theoretical echoes of the works of others. They have brought reality and life into this thesis through their contributions.

Second, our sincere appreciation goes to Joakim Winborg for his supportive guidance. His enlightening and challenging feedback steered us toward a more fascinating and compelling outcome. We would also like to extend a thank you to Thomas Rundqvist for inspiration and his interest in the project.

Lastly, we express gratitude to our friends and family for their patience, understanding, and motivation.

Lund, January 10th 2024

Carl Fröblom

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Table of Contents

1. Introduction

In this chapter, the context relevant to this study is presented, followed by a problematization that motivates the selected research field. Subsequently, the purpose of the study, what it aims to contribute, and the research question are introduced. The chapter concludes with clarifications of some key definitions.

1.1 Background

The pace of innovation in the world is at an all-time high with the age of information having transformed the world for most of the past century. This new business landscape has paved the way for alternative ways of making innovations. In the early 2000s, the concept of open innovation was coined by Chesbrough (2003), who described the phenomena as a method to accelerate internal innovation through the exploitation of knowledge transfers, contributing to the innovation's expanded market potential. The concept is not entirely new and has been questioned by among others Trott and Hartmann (2009) as being simply *"Old wine in new bottles"* (p. 715), where most principles can be found in research from across the 20th century, (e.g. Lotia & Hardy, 2009). However, the concept has been found by researchers and firms to be a useful collection of models and principles that have been assimilated into business models and strategies as well as focused research for the past twenty years (e.g. Hui et al. 2020).

One fundamental tenet of open innovation is the recognition that knowledge is dispersed throughout society, and the best competencies cannot be gathered within a single organization. Hence, companies must acknowledge and leverage the potential of external information to gain or maintain a competitive advantage (Chesbrough et al. 2006). Open innovation takes various forms and can engage a multitude of stakeholders. One type of open innovation is partnerships between small and large firms, a symbiosis that is supposed to be beneficial for both parties. Opportunities for collaboration between the two firms are partly caused by diminished product life cycles, increased international competition, and increased technological complexity (Vanhaverbeke et al. 2012). Large firms constantly look for ways to gain competitive advantages, and through collaborations with small firms, they can access new technologies, knowledge, and an entrepreneurial culture (Allmendinger, 2019). Small firms, on the other hand, typically experience scarce financial resources and lack the platform or network needed to exploit their innovations (Hora et al. 2017). However, when interorganizational collaborations are sought, it is important to recognize that challenges often accompany the benefits, particularly in alliances where parties differ significantly in their characteristics. (Das & He, 2006; Lotia & Hardy, 2009; Minshall et al. 2010). Since different types of organizations can learn and thrive from each other, an understanding of problems that can arise as well as management strategies is necessary to grasp (Minshall et al. 2010).

Challenges and management of partnerships between small and large firms will vary depending on how they collaborate. One approach for open innovation is licensing. Licensing is a collective term for agreements where intellectual property, commonly patents, of one party is permitted to be used by a second party. In some industries, such as the life science industry, this variant of open innovation is particularly popular. In the pharmaceutical industry, large firms have for the past decades reduced their basic research capabilities and shifted focus to large-scale manufacturing and commercialization of drugs, relying primarily on smaller firms to discover new drugs and treatments they can capitalize on through licensing (Chesbrough & Ghafele, 2014).

1.2 Problem Discussion

Since the seminal work by Chesbrough (2003), open innovation has been a trend in the literature about innovation strategy, mostly highlighting the benefits that come with placing parts of the innovation externally. However, open innovation is a broad domain that can be conducted in numerous ways, and different types contribute to different positive and negative characteristics (Hui et al. 2020). One subcategory of open innovation is collaborations between large firms and smaller ones (Corvello et al. 2023) where previous research has mostly been focused on the perspective of the large firm (e.g. Dahl 2014; Corvello et al. 2023) whereas small firms only have received limited attention (Radziwon & Bogers, 2019).

Collaborations between large and small organizations can be researched in different stages of their partnerships' life cycle, however, a significantly larger portion of research has been conducted on pre-collaboration phases (i.e. finding the right partner) than it has on later stages of the life cycle (e.g. Allmendinger & Berger, 2020).

The nature of this type of collaboration, where the actors are fundamentally different in multiple dimensions and capabilities, leads to imbalances and an asymmetric partnership (Minshall et al. 2010). Hora et al. (2017) exemplify both risks and benefits of asymmetric coopetition, and they briefly discuss that startups emphasize a concern for imitation and unfair execution of the partnership. More light needs to be shed on the role and possible challenges of the small firm for partnerships to succeed and proceed over a longer period (Radziwon & Bogers, 2019). Corvello et al. (2023) emphasized a gap in the literature on what effects inherent asymmetries in collaborations lead to. Furthermore, research has focused on organizations' internal capabilities and less attention is given to the inter-organizational level of open innovation (Fisher & Qualls, 2018). Thus, expanding the base of knowledge for small firms to access, regarding how to manage the asymmetry when collaborating with large firms, can be deemed valuable and necessary.

Patenting and licensing can facilitate open innovation and offer a secure way of knowledge sharing (Chesbrough, 2003). However, most firms struggle to establish successful licensing agreements, which has not received much attention in the literature (Hu et al. 2015). Razgaitis (2005) demonstrates that out of 100 licensable technologies, only 25 lead to a possible license, six to seven negotiations are started, and three to four agreements are ultimately signed. Furthermore, Lichtenthaler (2011) highlights that most businesses encounter managerial challenges when strategizing out-licensing practices, and Lang (1996) notes that small firms in collaboration with large firms through licensing is a fairly overlooked field of research. With the vast differences in resources, agility, culture, and capabilities between small and large firms, there is friction in getting such agreements in place between these types of parties, so the question remains what hurdles prevent more agreements from being successful, and what can be done to mitigate these hurdles.

1.3 Purpose and Research Questions

The purpose of this paper is to examine the challenges encountered by small firms involved in open innovation through licensing agreements with larger firms. Additionally, it seeks to explore the strategies implemented by these small firms to address and handle these challenges. The following research question was formulated to fulfill this purpose:

What challenges do small firms encounter when engaging in open innovation by out-licensing to large firms, and how do they manage these challenges?

1.4 Definitions

1.4.1 Small Firm

According to Gambardella et al. (2006), small businesses are those with less than 100 full-time equivalent employees. However, for the specific focus of this paper, the scope is further narrowed to firms employing between 5 and 49 full-time equivalent employees.

1.4.2 Large Firm

Large firms are all those with more than 250 full-time equivalent employees (Gambardella et al. 2006).

1.4.3 Open Innovation

Open innovation is defined as: *"a distributed innovation process based on purposively managed knowledge flows across organizational boundaries, using pecuniary and non-pecuniary* *mechanisms in line with the organization's business model"* (Chesbrough & Bogers., 2014, p. 17). In this thesis, open innovation is examined within the boundaries of *licensing.*

1.4.4 License

A license is a legal contract between a licensor and a licensee, permitting the licensee to exploit intellectual property owned by the licensor, normally under specified conditions like specifying time frame, geographical location, monetary exchanges, limitations to certain markets, exclusivity, and many more (Bogers et al. 2012). The types of intellectual properties can vary, and in this study, they represent patents and protected knowledge. In the focus of this study, the small firm is the licensor, and the large firm is the licensee. Together they constitute a licensing agreement where the licensor is out-licensing its intellectual property to the licensee, who in turn is in-licensing.

1.4.5 Asymmetric Partnerships

Asymmetric Partnerships are one way of conducting open innovation, where two unequal firms collaborate (Minshall et al. 2010; Allmendinger, 2019). In open innovation literature, asymmetric partnerships are often referred to as collaborations between small and large firms, which is the definition in this article.

2. Theory

In this chapter, the theoretical background is outlined. It consists of previous literature on Licensing as open innovation, open innovation between small and large firms, and Resource Dependency Theory. This theory will later be applied in the analysis to answer the research question.

2.1 Licensing as Open Innovation

Minshall et al. (2010) categorize different types of open innovation partnerships on a scale of the degree of integration, as illustrated in *Figure 1.* Licensing is one form of partnership or alliance that small firms can engage in together with large firms to conduct open innovation.

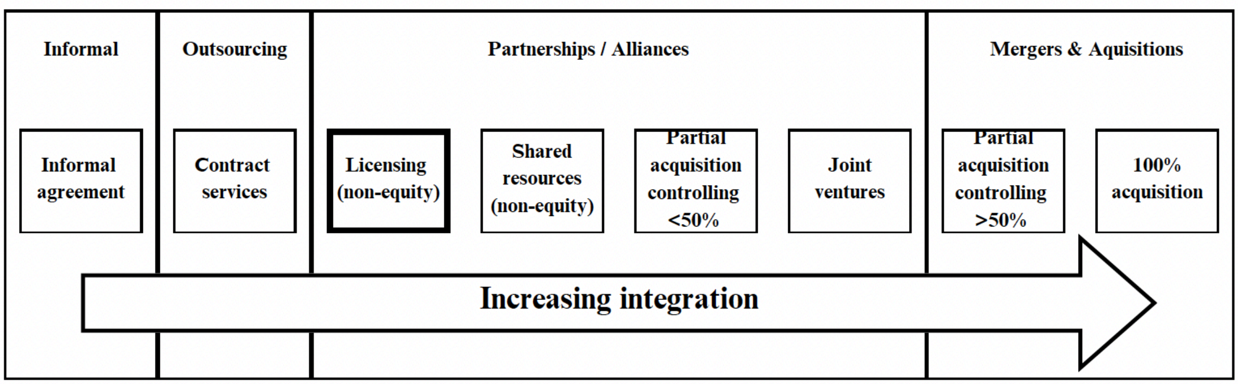

Figure 1: Different types of partnerships represented along a continuum of increasing integration (Minshall et al. 2010)

Bhatnagar et al. (2023) highlight different ways to innovate through open innovation, among them are in-licensing and out-licensing. In-licensing refers to a strategy where a firm acquires knowledge and intellectual property rights (IPRs) from the innovator. On the contrary, out-licensing is the process of handing over commercialization responsibilities to another firm, in return for financial compensation or other advantages like access to external knowledge and the opportunity to set industry benchmarks (Bhatnagar, 2023., Hu et al. 2014). In licensing agreements, an important strategic decision is licensing exclusivity. Granting exclusivity allows the licensee to solely use the technology in the region or market specified. Typically, this means the licensor gives away their own right to utilize the technology in the affected area during the license period. Non-exclusive agreements, however, permit multiple licensees to utilize the same technology on the same market during the same time, including the licensor itself (Aulakh et al. 2010).

Lichtenthaler (2011) stresses that most businesses making strategies for out-licensing encounter major managerial difficulties, and propose management strategies for successfully implementing licensing in their business model. Three major organizational strategies are presented: creating temporary project teams, making a dedicated organizational structure, and incorporating many employees in licensing efforts to build a culture around that.

Bogers et al. (2012) emphasize licensing as a critical strategy for governing intellectual property within open innovation collaborations. Negotiating with exclusivity will in turn dictate negotiations and compensations in the licensing agreement**.** Licensing, as the authors note, serves as a safeguard against the misappropriation of shared knowledge, particularly in cases involving complex or advanced knowledge domains. The article discusses how licensing agreements can be structured to manage uncertainties and conflicts, including terms that specify the usage of knowledge, conflict resolution mechanisms, and conditions for granting back license exclusivity. Furthermore, they highlight the inherent limitations of contractual control due to the high costs associated with contract formation. The authors highlight a complementary approach to mitigate the risks of knowledge misappropriation in open innovation settings through the development of trust. Bogers et al. (2012) also touch upon challenges like the information paradox in licensing, where revealing too much about the product can compromise its value. They acknowledge the potential risks for licensors, including concerns about licensees' motives, such as using the license to assert market control (Das & He, 2006; Bogers et al. 2012).

2.2 Small and Large Firm Characteristics

Small organizations tend to have great flexibility and be fast to respond to changes in their environment or markets. They also have flat and organic organizational structures with shorter decision processes than their generalized large counterparts with vertical hierarchies and mechanistic processes (Daft et al. 2020). Large firms typically have a considerable base of resources, and accumulated specified knowledge, but seek a specific innovation capability (Hora et al. 2017; Corvello et al. 2023) and an entrepreneurial force. Startups and small firms, on the other hand, have unique strengths and can be more flexible, risk-taking, and innovative, but lack the resources needed to fully leverage their potential (Hora et al. 2017; Corvello et al. 2023).

Das and He (2006) identify further differences between large and small firms, where the small firms engaging in partnerships with large firms are likely lacking financial, manufacturing, or marketing resources. Das and He (2006) also highlight a disparity in the perceived importance of an alliance among its parties. Small firms are known for viewing these alliances as a means of survival, whereas larger firms, with their substantial resources, are capable of engaging in several collaborations at once. This asymmetry could result in risks of self-serving behavior and diminished commitment from the larger companies. The authors also point out that new and small firms lack legitimacy, which limits these firms' opportunities to attract established firms (Das & He, 2006).

2.2.1 Collaborations between Small and Large Firms

Academic literature has slightly different definitions of collaborations between small and large firms. Minshall et al. (2010) characterize them as a way for companies to access complementary resources, and they exist on a continuum from specific shared tasks to broad collaborations. It can also be described as a formalized interchange of knowledge and resources, coupled with the distribution of authority and responsibility (Fisher & Qualls, 2018).

It is common to address these collaborations as Asymmetric Partnerships, a term that highlights a partnership between partners that are unequal in one or more dimensions (Minshall et al. 2010; Allmendinger, 2019). Collaborations like this arise because both parties have something to win from it. In high-technology sectors, small companies desire large firms to commercialize and develop their technology (Vanhaverbeke et al. 2012). In contrast, collaborating with smaller firms allows large corporations to reduce their reliance on in-house development, which is often linked with significant capital investments and a higher risk of limited returns from potential projects (Vanhaverbeke et al. 2012). Asymmetry in partnerships can depend on multiple variables and lead to many different outcomes, both positive and negative for each partner. Possessing limited resources, small firms face the challenge of being dependent on external actors to deliver their innovations, (Radziwon & Bogers, 2019). The nature of collaborations between these actors entails a complex environment for the parties to manage, due to the differing characteristics of a large and small firm, and the different goals they seek to achieve by engaging in a partnership (Corvello et al. 2023).

Das and He (2006) identified two categories of differences in partnerships between established and entrepreneurial firms, intrinsic factors and alliance-making factors. Intrinsic factors contain differences between the firms independently, as a single organization without collaborations. Alliance-making factors are about interfirm differences, in other words, when the organizations have agreed to and formed a partnership.

Vanhaverbeke et al. (2012) discuss the limitations faced by SMEs in protecting their intellectual property during collaborations with larger firms, primarily due to the high costs involved. They note that SMEs' profitability in such partnerships largely hinges on the decisions made by the larger firm. The authors also highlight a kind of dependency where SMEs are 'locked in' to the partnership, to the extent that, even in cases of legal disputes where the smaller firm has a strong case, they often cannot take action due to their constrained position. Pursuing the legal enforcement of an economically dependent partner is not considered a viable strategy.

2.2.2 Challenges and Management Strategies

Usman and Vanhaverbeke (2017) examine a small firm out-licensing to a larger firm, providing Philips with the small firm's Airfryer technology. In exchange for providing Philips with innovative opportunities, the start-up was spared the challenges of constructing distribution networks, establishing a market reputation, and managing financing, and the small firm attained market entry through Philip's complementary assets. Moreover, the article mentions ways that startups can manage asymmetrical partnerships, for instance, by engaging in open innovation ecosystems and keeping some tacit knowledge in-house through secrecy contracts, university collaborations, and non-disclosure agreements.

Usman and Vanhaverbeke (2017) further describe how asymmetrical partnerships can shift over time and successfully change as the firms change individually if the collaboration is managed successfully. Thus, it is important to discuss contingencies in the contract negotiations. Additionally, the authors find that managers' previous experience with large firms is beneficial to know how to manage those relationships, for example considering the asymmetries within the collaboration, like large firms' slower decision-making based on bureaucratic decision processes. Prior experience with similar partners is equally beneficial in terms of negotiation skills regarding intellectual property issues, financing rounds, and operational concerns.

Coopetition is another form of collaboration where competitors form an alliance. Hora et al. (2017) say that startups can deal with their liability problem of being new and small by engaging in coopetition with larger firms. Hora et al. (2017) did a case study about coopetition, where they interviewed 70 Austrian startups and large firms cooperating to examine the benefits and risks associated with such collaborations, from both parties' perspectives. From the perspective of the startup, they found that risks included concern of the large firm imitating their innovations since the large firm possesses a larger resource pool. Some startups claimed that large corporations tried to stretch the negotiation process to get information about their innovation without committing. Gambardella and Panico (2014) highlight that bargaining power increases when the small firm negotiates with multiple potential partners simultaneously. Doz (1988) also refers to the risk of exploitation and intellectual theft for small firms in collaboration with large firms. Lechner et al. (2019) point out that once established firms acquire the desired knowledge from a partnership, they might start to underinvestment, impose unreasonable demands, or redirect resources elsewhere. In open innovation alliances between small and large firms, the small firm often experiences an overdependence on the large firm since the partnership is more important for their survival than for the large firm (Lechner et al. 2019).

Minshall et al. (2010) lift challenges and managerial approaches for collaborations from four perspectives: startup, large firm, involved lawyers, and investors. Startups face challenges of how to initiate contact with potential partners and who to talk to. Moreover, the transfer of responsibility over the partnership in the large firm can lead to a decrease in the initial enthusiasm (e.g. when responsibility shifts from enthusiastic innovation managers to the legal team writing their contract). Minshall et al. (2010) also highlight power imbalance as a challenge, since the startup might be fully dependent on the collaboration while the larger firm has several collaborations. Additionally, startups refer to slow decision cycles, and that larger firms simply do not understand them, as problems (Minshall et al. 2010). Forrest and Martin (1992) highlight successful and unsuccessful factors respectively in alliances between large and small firms. Factors identified as unsuccessful consisted of incompatibility of partners, different strategic goals, and no mutual trust.

Management strategies employed by startups include utilizing their business model and strategy to navigate potential partnerships, mapping out internal competencies to identify complementary assets, and understanding large firms, particularly their partners, to effectively educate them about start-up culture and the collaboration. Additionally, the article emphasizes the importance of identifying decision-makers in the large firm and clarifying the expectations and benefits of the partnership. The study also advocates for regular review meetings, maintaining consistent and open communication, documenting all interactions as they can be crucial in case of disagreements, and routinely evaluating the partnership (Minshall et al. 2010). Factors for successful alliances according to Forrest and Martin (1992) were, for instance, open communication, good interpersonal relationships, continual mutual commitment, willingness to change strategic objectives, and compatible decision-making processes.

Social bonding is an important attribute to foster in collaborations, as it builds trust which is a beneficial attribute for enhancing partnerships. Trust is particularly advantageous when the collaboration has to navigate through future challenges that may arise and were not previously discussed or planned for. Likewise, partners working through uncertain events can build trust.

Social bonding can be cultivated through continuous communication, responsiveness to a partner's needs, and making uncalled-for favors (Bian & Katila, 2019).

Kale et al. (2000) emphasize the importance of trust in building relational capital within collaborations, which is enhanced by jointly resolving conflicts to mutual satisfaction and maintaining regular contact between partners. Moreover, by ensuring fair negotiations, and upholding commitments, trust can be built, and in the long term, it can function as relational governance in partnerships, safeguarding against self-serving behavior and collaborative difficulties in coordination (Zaheer & Venkatraman, 1995). If partners in collaboration consider each other trustworthy, the need for short-term performance measurements are not needed, minimizing the contractual complexities, since the parties have a positive belief regarding the longevity of the partnership (Poppo & Zenger, 2002). Vanhaverbeke et al. (2012) also highlight the importance of building strong personal relationships through trust and mutual benefits, adding that it becomes challenging for SMEs when the contact person of the collaborative partner for some reason leaves (Minshall et al. 2010; Vanhaverbeke et al. 2012).

Relating to Das and He (2006), the asymmetry in perceptions between firms in an alliance can be problematic for a small firm. When a large firm exhibits adamant skepticism towards the small firm’s technology, it can decrease partner commitment, posing a challenge in how to cope with the latter while not risking leaking technology secrecies. The partners' commitment has a significant role in the success of the alliance, therefore the authors emphasize securing its consistency. Other differences in alliances are organizational structure, pace of decision-making, and communications (Das & He, 2006). Bian and Katila (2019) find that small firms adjust and adapt their internal workflow to cope with the inertia of large firms when collaborating.

2.3 Resource Dependency Theory

The Resource Dependency Theory (RDT) was developed by Pfeffer and Salancik (1978), highlighting the crucial role of understanding the organizational context and external environment in interpreting organizational behavior. RDT emphasizes the organization as an open system, dependent on the external, but states that managers can take measures to reduce environmental uncertainty (Hillman et al. 2009). In the external, other organizations exist, meaning that one firm can depend on another firm despite being legally independent. This dependency is connected to their resources and arises when one company has resources another company needs. Resource dependency is directly connected to power, having control over important resources equals power over organizations needing those resources (Hillman et al. 2009). Simultaneously, one firm's power over another means the same amount of dependency the other way around. Power in organizations is relational, reflecting the connections between different entities. It is also highly situational, dependent on specific circumstances. Moreover, power can be mutual, signifying mutual interdependence among organizations.

RDT is one of the primary theories explaining inter-organizational relationships. Partnership formations reduce uncertainty and interdependence for the organization through the acquisition of resources (Pfeffer and Salancik, 1978; Hillman et al. 2009). However, most inter-organizational collaborations are characterized by only a partial absorption of interdependencies (Hillman et al. 2009). Concerning power dynamics, Provan et al. (1980) assert that firms acquire influence over resource providers through alliances with other agencies. Examining the power balance among international partners, Yan & Gray (2002) found that alliances form when mutual dependence exists, yet the partner controlling more critical resources retains strategic control.

Taking a nuanced view, Gulati and Sytch (2007) differentiate between two dimensions of interdependence - dependence asymmetry and joint dependence. Joint dependence is more likely to occur between firms with mutual interdependence, offering a means of reducing uncertainty and enhancing overall performance. Tsang (1999) argues that information asymmetry can create a power imbalance.

3. Method

The methodology chapter details and justifies the research process and design, along with the selection of literature and the sampling for the empirical material. It also covers data collection and the chosen method for data analysis. The chapter concludes with a discussion of the trustworthiness of the study.

3.1 Research Process

The reality the authors seek to examine is subjective, as the people within it are fundamental to the constituting of social phenomenon. This study therefore adheres to a constructionist ontology assertion, stipulating that the social phenomena of how small firms manage their challenges exists through the human interaction between small and large firms (Bell et al. 2022). This ontological direction implies that individuals construct the social phenomena since they constitute and represent the small and large firms in their actions (Bell et al. 2022; Gioia et al. 2012). Therefore, the perceptions of the employees in small firms are necessary to study to understand the reality of these relations. As a result, this study is founded on an interpretative epistemological position (Bell et al. 2022).

This study aims to contribute with new theoretical insights by investigating the relationship between small and large firms enrolled in licensing partnerships with each other. Through the analysis of the perceptions of small firms, the authors seek to generate theoretical contributions on how small firms manage any challenges encountered when engaging as a licensor of technology to a large firm licensee. The small firm perception is acquired through a sample of experts or knowledgeable agents (Bogner & Menz, 2009; Gioia et al. 2012), whose combined experiences are assumed to provide a basis for theoretical development.

The research approach can be characterized as abductive, reflecting a dual stance toward existing theories in some instances (Bell et al. 2022). For example, preliminary readings were conducted before data collection on open innovation and collaborations between small and large firms.

Likewise, the empirical findings were then compared with existing literature during the data analysis. On the contrary, the primary objective during the phase of data collection was to acquire as broad a base of knowledge as possible within the realm of licensing from small to large firms.

As the study primarily aims to illuminate *what* the challenges are and *how* they are managed, a qualitative research strategy has been selected. This selection potentially omits the opportunity to know how significant a challenge is or how effective management strategies are.

3.2 Research Design

The chosen research design for this study is a systematizing expert interview design, which aligns with the study's interpretive epistemological assumption. In this methodological approach, experts are not the primary focus of the research; instead, they serve as informants (Bogner & Menz, 2009), offering valuable insights into the challenges and management aspects of out-licensing to large firms. Consequently, the study aims to tap into the knowledge derived from experts' actions and experiences, which is endorsed by Usman and Vanhaverbeke (2017) . Based on the assumption that experts possess specialized knowledge, interviewing them offers the opportunity to gather comprehensive and systematic information that would otherwise remain inaccessible to us as researchers (Bogner & Menz, 2009).

Bell et al. (2022) state that research design is instrumental in understanding a study's approach to data collection and analysis. Meanwhile, expert interviewing design is considered sui generis, that is, different depending on the objective and context of the research (Meuser & Nagel, 2009). However, there are distinctive characteristics of expert interview design that will be elaborated upon in the respective sections, namely *3.5 Data Collection* and *3.6 Data Analysis*.

3.3 Literature Selection

A comprehensive literature review was made in the early phases to understand the current state of knowledge and find a niche where knowledge may be lacking. Prior to data analysis, new literature searches were conducted to access relevant literature to consult with the empirical findings. Thus, the process of literature selection can be described as dynamic. The literature review was made through two main processes, highlighted by Bell et al. (2022) as *Coherence* and *Problematizing.* Coherence refers to understanding the existing knowledge, and how different research relates to each other. Problematizing is done to approach a suitable research question. This is done by noting problems that appear more or less explicitly, for instance, gaps in the literature (Bell et al. 2022).

The chosen literature primarily consisted of peer-reviewed academic journals and articles. These were found through online databases provided and accepted by Lund University, such as LubSearch and Web of Science. Bell et al. (2022) acknowledge the value of using online databases and recommend both university-provided databases and Web of Science. A critical mindset was always present when reviewing articles online and the merits of the author and publisher were evaluated. This process needs careful consideration according to Bell et al. (2022). Furthermore, the number of citations and the publication date were considered, as well as the method used by the authors to derive their conclusions. A few exceptions were made from finding literature in online databases. Some sources were found in books provided by the business library at Lund University. These books were used to access primary sources, commonly referred to in the research area, such as Chesbrough (2003) who coined the term open innovation.

3.4 Sampling

This qualitative study utilizes generic purposive sampling where participants could be chosen to best contribute to the understanding of our research question (Bell et al. 2022). Following the assertion mentioned in *3.2 Research design* and underscored by Usman and Vanhaverbeke (2017), experts need to have extensive experiences in order to extract knowledge from them, a sample consisting of interviewees with substantial careers have been chosen, highlighted by the columns outlining licensing experience in *Table 1*.

Given the variation of the definition of *startup* in literature and common language, experience from small firms that could be categorized as such was included in the study. This approach aimed to prevent potential challenges that might have arisen when labeling organizations and, as the characteristics of startups and small firms often overlap, it can be difficult to differentiate between these. The criteria utilized in the end are described in the following.

The individuals participating shall have been or currently be CEO, business developer, or other employee responsible or deeply involved in discussed licensing agreements and have detailed experience of out-licensing agreements with the following properties:

- ➢ Open innovation type: Out-licensing agreement where the small firm is the licensor
- ➢ Licensor organization size: Between 5-49 employees at the time of licensing
- ➢ Licensee organization size: More than 250 employees
- ➢ Licensor & Licensee Industry: Life Science, including Pharmaceutical, Medtech, and Biotech.
- ➢ Geographical location of licensor: Nordic

A total of 7 interviews of approximately 60 minutes were conducted to provide empirical data for the study. Some of the sampled interviewees have experience in firms that have varied in size during their tenure, exceeding the limit of 49 employees at some point. In these instances, the interviewee has been informed only to speak about their relevant experience when the company had the right amount of employees. This is a relatively small sample, but Bell et al. (2022) highlight that for qualitative research, a smaller sample enables more in-depth explorations, suiting this instrumental case study.

3.4.1 Interviewees

The interviewees included in the sample are presented below in *Table 1*, detailing what roles they have held in a small firm as they have engaged in licensing to a large firm. The size of the small firm in question is also presented, along with the magnitude relevant to small to large firm licensing experience, and their general licensing experience in any company size or direction. The total experience of relevance to this study amounts to 28 license agreements and 76 years of accumulated experience across the 8 interviewees. The general licensing experience amounts to 88 agreements and 105 years of accumulated experience.

Interviewee A1 and A2 both contributed to the same interview, but their contributions overlap in only one agreement whereas A2 contributed with complementary details unfamiliar to A1. The contributions were included to add resolution to the experience of the small firm regarding this license agreement.

Table 1 - Overview of interviewee's experiences. Experience from multiple companies is separated by slashes where applicable.

Interviewee	**Relevant roles**	**Relevant company size**	**Relevant specific license experience discussed**	**General licensing experience**
A1	CEO / CEO	30 / 35 FTE	5 agreements 10 years	10 agreements 10 years
A2	Business Developer	35 FTE	1 agreement 5 years	4 agreements 5 years
B	Business Developer	10 FTE	1 agreement 4 years	10 agreements 20 years
C	CEO	18 FTE	2 agreement 7 years	25+ agreements 20 years
D	Business Developer	7 / 47 FTE	3 agreements 6 years	4 agreements 6 years
E	Business Developer	5-50 FTE Multiple companies	>10 agreements 10 years	20 agreements 10 years
F	CEO / CEO	10-35 / 30-35 FTE	2 agreements	10 agreements

			22 years	22 years
G	Business Developer	30 FTE	5 agreements 12 years	5 agreements 12 years

3.5 Data Collection

Following the interpretive epistemological position of the study (Bell et al. 2022), it is considered necessary to examine the research from the perspectives of small firm's representatives (Gioia et al. 2012; Bell et al. 2022). Meuser and Nagel (2009) consider it necessary to have an open interview structure with non-rigid questions when interviewing experts to allow for their reflections to fully prosper. Thus, the researchers encouraged the interviewees to speak freely to capture broader perspectives through semi-structured interviews. Characterized by its high flexibility (Bell et al. 2022), consistent with expert interviewing (Meuser & Nagel, 2009), it allows the interviewers to adjust their questions or follow-up questions to the direction of the interviewee's responses, enhancing the flow of communication and contextualization through in-depth insights (Bell et al. 2022). However, Bell et al. (2022) suggest that a degree of structure is advantageous for drawing comparisons between responses during data analysis. Therefore, an interview guide was used, serving as a checklist of topics relevant to the research to discuss. It also provides the researchers with guidance and flexibility (Meuser & Nagel, 2009; Bell et al. 2022).

In conducting interviews for the study, the authors initially focused on having interviewees discuss a particular out-licensing agreement in which they had been involved. This method was chosen to collect detailed, context-specific insights. This approach aligns with Meuser and Nagel's (2009) strategy, which emphasizes the value of narrative in extracting expert knowledge, as certain insights often emerge gradually during the narrative process. However, when discussion of a specific agreement was not feasible, typically due to confidentiality constraints, interviewees were prompted to adopt a more generalized perspective. This shift entailed a broader focus on the challenges and management strategies pertinent to out-licensing in large firms. The generalized viewpoint of the interviewees increased the researchers' focus on ensuring discussions were relevant to the study’s sample requirements. Meanwhile, the authors were active listeners, ensuring that the conversation remained connected to the challenges and management of licensing agreements with large firms. Thus, follow-up questions were tailored to the context of the conversation while still aligning with the interview guide. It is noteworthy that during these interviews, our ability to recognize and recall points previously mentioned by interviewees significantly facilitated the formulation of relevant follow-up questions. This recognition often prompted us to gently guide interviewees back to those topics. Our approach was consciously non-leading, aiming to avoid influencing the interviewees’ responses. While this sometimes led to conversational dead-ends, it also opened avenues for uncovering new insights within the topic discussed.

The interviews were conducted in Swedish to ensure the interviewees’ use of appropriate vocabulary, minimizing the risk of information loss due to language barriers. When translating responses into English, the authors exercised extra caution to minimize data alteration (Bell et al. 2022). Another variable influential in acquiring quality responses is trust (Bell et al. 2022). Trust was another critical factor in acquiring quality responses. To build trust, the authors ensured transparency by informing respondents about their anonymity and anonymizing company information. Information about data storage was provided, and interviewees were offered the option to review their transcribed interviews. Two interviews were conducted in person and five via Microsoft Teams, where the transcript recording function was utilized and subsequently refined. The in-person meetings were recorded on a smartphone, later digitally transcribed, and refined.

Given the nature of semi-structured interviews, recording and transcribing them was essential for the research method to fully capture the extent of the responses, including their contextual nuances. The transcriptions played a pivotal role in the data analysis process, enabling an iterative process of consultation and reflection. They also allowed for the translation of direct quotations, thereby safeguarding against concerns regarding the study's validity raised by readers, as noted by Bell et al. (2022).

3.5.1 Pilot study

As part of determining the study's focus, testing the sampling criteria, and validating and adjusting the interview guide, a pilot interview was conducted with the CEO of a medical and biotechnology research company. This firm, employing 10 individuals experienced in various open innovation methods, including joint ventures and out-licensing, offered valuable insights. The pilot interview provided an opportunity for the researchers to gain fresh insights and reassess their preconceptions about the challenges and management strategies associated with out-licensing to large firms. A key finding was the benefit of encouraging interviewees to speak freely, which facilitated the recall of pertinent information. This approach was then applied to subsequent interviews in the sample. Moreover, the insights gained from this pilot study reinforced the decision to focus on licensing as a type of open innovation. The pilot study proved valuable, establishing a foundation of preliminary knowledge that facilitated the acquisition of higher-quality data in subsequent interviews. This is crucial, especially when interviewing experts, as interviewers' lack of understanding can lead to the risk of interviewees omitting important insights (Meuser & Nagel, 2009).

3.5.2 Interview-guide

In constructing the interview guide, three main subjects were identified as the basis for examination: “Demographic information about the interviewee and organization,” “Description of a specific out-licensing partnership,” and “General questions about challenges, managing challenges, and contextualizing out-licensing agreements.” A set of questions were then formulated, aligned with these main titles, and are presented in *Appendix* 9.1.

3.6 Data Analysis

A challenge in qualitative studies like this one is the handling and analysis of a large volume of unstructured verbal data from interviews (Bell et al. 2022; Eisenhardt, 1989). To address this, Eisenhardt (1989) suggests an early phase of analysis involving detailed descriptions of each interview. This approach was adopted by making transcriptions and individual descriptions of each interview to gain a thorough understanding of each expert's experience.

When analyzing each case separately, the focus was on finding themes, which is an approach to analysis that is argued to increase the validity that qualitative research often lacks (Gioia et al. 2012). Likewise, constructing themes is a method of analysis consistent with expert interviewing (Meuser & Nagel, 2009). The thematic analysis was dependent on the transcription of the interviews to identify themes through indicators such as repetition, theoretical inspirations, similarities and differences in responses, and the context of these responses (Bell et al. 2022). The initial step involved identifying 1st-order concepts in the transcription, emphasizing an informant-centric approach, meaning that the interviewees' language, Swedish, was used directly (Gioia et al. 2012). A notable challenge was translating the Swedish interviews into English while keeping the informant-centered approach. Special care was taken during translation to evaluate the context of each statement to ensure the intended message was conveyed adequately in English. This included consulting both dictionaries, thesauri, and ChatGPT, weighing the words' meanings carefully where ambiguity could be present, and presenting the most justifiable translation considering the apparent intent of the interviewee.

The subsequent step in the data analysis involved finding similarities and differences in the 1st-order concepts to create 2nd-order themes (Gioia et al. 2012). These 1st-order concepts and 2nd-order themes are presented throughout *Chapter 4*. The 2nd-order themes constitute the rubrics encompassing the challenges encountered by small firms, with the relevant 1st-order concepts under each theme, reflecting the interviewees' words. The management strategies for each challenge are also presented as 1st-order concepts in connection to the challenge referred to by the interviewee. To ensure clear data-to-theory connections, the 1st-order concepts were often presented through direct quotations from the interviews (Meuser & Nagel; Gioia et al. 2012).

The themes were further distilled into aggregated dimensions: *Large Firm Characteristics, Interorganizational*, and *Small Firm Characteristics.* In the analysis section, additional 2nd-order themes emerged from a deeper analysis of the empirical material, in conjunction with relevant literature. 2nd-order themes of management strategies across different challenges were identified to discern patterns and connections between the challenges and their management. The 2nd-order themes of the management strategies were distilled into aggregated dimensions constituting the rubrics, namely: *Hard Measures, Soft Measures,* and *Unique Resources*. This analysis aimed to develop a dynamic model, and, to justify the model, it is crucial to show the dynamic relationships among the concepts to clarify all data-to-theory connections (Gioia et al. 2012).

3.7 Trustworthiness

In a qualitative study, the usual quantitative measures of external and internal validity, and external and internal reliability are not directly applicable (Bell et al. 2022). However, they may be applied with modification. Lincoln and Guba (1985 cited in Bell et al. 2022) and Guba and Lincoln (1994 cited in Bell et al. 2022) suggest qualitative “analogs” to validity and reliability, through trustworthiness. Trustworthiness, in turn, is described in the dimensions of credibility, transferability, dependability, and confirmability, which this study will use to discuss the trustworthiness of the study.

The analysis has found support in published literature and well-developed theories for empirical findings, supporting the credibility of the data. All the interviewees were offered to review the transcripts and translated summaries, but only one interviewee elected to do so, limiting our ability to practice respondent validation efficiently.

The authors have made efforts to the best of their abilities, including consulting dictionaries, thesauri, and ChatGPT for support and confirmation of the meaning of the translations, to best represent the statements made by the interviewees while maintaining the context unaltered. It is also in line with Gioia et al. (2012) to not force interviewees into a secondary language, as the fidelity with which they may express themselves is unlikely to be as good as in their mother tongue. As two of the authors have Swedish as their mother tongue, the understanding of sublime nuance and hidden meaning is very good on the authors' part as well. To then translate into English using proper tools for translation, and utilize the shared knowledge of Swedish of both interviewers and interviewees, securing the same meaning in translation is far more likely to be successful than by forcing all involved into secondary languages during a live, time-limited interview. The next level of quality would involve a qualified translator which was unfeasible for this project. It is therefore argued that credibility in this respect can be considered valid.

Transferability has been supported by thick empirical descriptions, elaborating in detail on the respondents' experiences and using plenty of direct quotes to support the findings and to allow for detailed scrutiny and evaluation against other contexts by others. What jeopardizes the transferability is the assumption that our interviewees, in accordance with the interpretive epistemological position of the study, have an accurate perception of the reality in small-to-large firm licensing relations and that they act as both knowledgeable and honest agents. As their statements depend on memories of experiences in the past, these statements may, due to human nature, base themselves on incomplete or perhaps glorified memories of past experiences and put emphasis on both negative and positive directions for the perceptions of challenges and management strategies in their context. As such, the available data may not be true, the correct data, or a complete set of data, but by using multiple experts from the same context, this study has found support for the identified themes and dimensions between multiple interviewees, as well as a good degree of saturation upon the last interview, strengthening the case for a valid and transferable result.

The concept of dependability is difficult at best to pursue along the lines of Guba and Lincoln where an auditing practice of all research data is proposed. What can be argued is that the concept of internal reliability is supported by the fact that all three authors have been deeply involved in the data collection and analysis (Bell et al. 2022) and that the findings have been thoroughly discussed among the authors.

In terms of replicability, there are both temporal issues and issues of external validity. In the temporal dimension, the interviewees may change their own views on the matter due to new experiences or simply changes in the context and environment of the business, but this effect is counteracted by the purposive sampling with the criteria of significant licensing experience. While a novice in the field of small to large firm licensing may be very likely to change their contextual understanding significantly with the next licensing experience, an interviewee with substantial experience is much less likely to do so, assuming that the context is fairly stable.

In the issue of external validity, the small sample size limits the obvious generalizability. However, it is likely that any expert operating in a similar context would gain similar experiences as the sample in this study. Considering the support found in literature and established theories for the themes and experiences discovered empirically and through analysis in this study, a replicating study might yield somewhat different results, but it is unlikely that the findings of this study would be rejected at first glance. To counter this, and welcome replication of the study, the research method has been thoroughly documented and the authors have strived for maximum transparency in order to compensate for the limitations in this respect. Hopefully, this is sufficient to allow replication to a satisfactory degree.

4. Empirical Material

In this chapter, a compilation of the empirical material gathered from the interviews is presented. The structure of the chapter is organized into sections based on the aggregated dimensions that reveal the origins of the challenges identified in the interviews: Large firm characteristics, Interorganizational dynamics, and Small firm characteristics. The management strategies are also presented, each alongside the specific challenge(s) they address. It is important to note that all the empirical material presented reflects the perspective of the small firm.

4.1 Visualization of the Empirical Material Structure

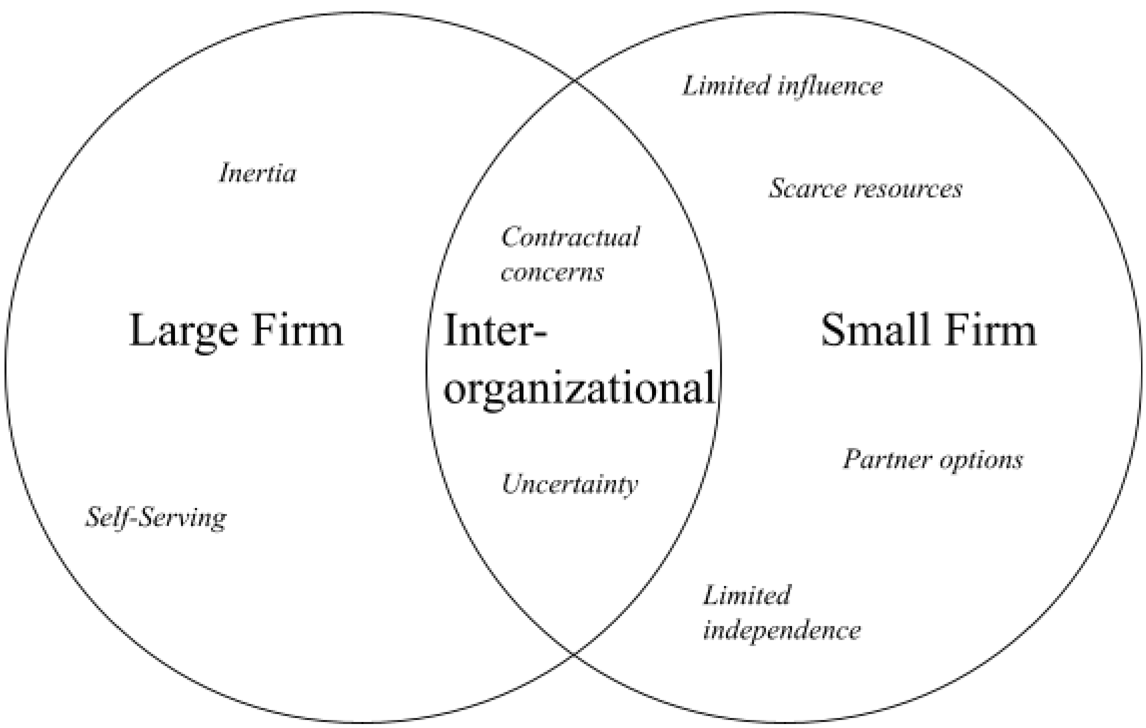

Figure 2: Derivation of challenges / second-order themes

4.2 Challenges and Management of Large Firm Characteristics

4.2.1 Inertia

The most commonly cited challenge in out-licensing agreements with large firms, and often the first spontaneous response from interviewees, was the inertia within these firms. All interviewees highlighted large firms' slow and complex decision-making processes, leading to protracted negotiations and delayed responses. Interviewee D comments on the response time of large firms:

> *"Then they come on the last day of April with a bunch of changes and new ideas and they want an answer from us within an hour. But they always take a very long time themselves, so it's incredibly frustrating. And at the same time, I haven't really felt that we could afford to play tough with them."*

In interview A it is mentioned that one reason for lengthy negotiations is the meticulous attention large firms pay to legal aspects. They further state:

> *"A major challenge is that if we had a meeting, there would be 3 people from our company present: the CEO and business developers. If we need to make a decision, we can do it there and then on almost anything. And on the other side, there are representatives from a larger organization who need to get support for [decisions] here, there, and everywhere, so there's a completely different inertia in how they work."*

All interviewees agree that the protracted processes in collaborations with large firms stem from their organizational structures. Interviewee B describes these structures as highly formalized and inflexible. Interviewees E and G point out the hierarchical nature and the multiple levels through which information must pass before a decision reaches the smaller firm. Additionally, Interviewees C and F note that the large number of people in large organizations contributes to inertia, as many individuals have input on the project. Interviewee C observes that large companies also adhere to strict strategic plans with specific product launch windows, where missing one leads to 6 months until the next opportunity and therefore significant market delays:

> *"A large company has its launch windows, and these must align with an overall planning. Thus, what takes months in a small company can take years in a large company."*

To manage inertia, interviewees A and F emphasize understanding the operations of large firms and the internal processes they must navigate. Interviewees A and E stress the importance for small companies to be professional, well-prepared, and structured to expedite processes and make them run smoothly. To counter slow response times, interviewee D sets deadlines two weeks ahead of the actual deadline. Interviewee E emphasizes enlightening the large firm about the mutual importance of quick responses. Interviewee F usually asks for an expected response time to know when it is appropriate to send reminders. Interviewee G accelerates the process by responding swiftly to large firms' requests, which is made possible by working closely with legal advisors. Interviewee D highlights that having a product that's really valuable for the large firm will also speed up the process, and they also seek alternative partners to put pressure on the large firm response rate. Interviewee E makes sure to have relevant market registrations ready for the product to boost response time through their image of seriousness. Lastly, interviewee E advocates for in-person meetings to speed up processes, and emphasizes finding someone to make a hero within the large firm, to bypass its hierarchy:

> *"I always look for, who I can make a hero? [...] Then they will help internally and escalate things faster."*

4.2.2 Self-Serving

A recurring theme from the interviews is that large firms have self-serving tendencies, which often involve making decisions with little regard for their smaller partners. For example, Interviewee C highlighted instances where internal politics and product launch schedules in large firms led to the unexpected de-prioritization of their licensing partnership. Interviewee B had experienced situations where large firms made inconsiderate decisions, such as returning out-licensed IPRs due to market and organizational contingencies. The interviewee gave two examples:

> *"They came back to us, saying 'We have a new research manager. He does not like this program, so you may have it back.'"*

> *"Suddenly they got in touch and stated that they did not want the product anymore. [...] This was after perhaps 10 years of ownership [...], but during that time better products had reached the market"*

One instance where self-serving becomes evident, according to Interviewee B, is during negotiations, where managers in large firms often exhibit risk aversion, resulting in standardized, tough partnership criteria that fail to consider the unique attributes of the small firm. Interviewee D agrees that the large firm legal department is rigid, but emphasizes that it is costly to argue against that. Interviewee A also highlights this standardization and gives an example of rigid legal requirements:

> *"There might be a more junior legal advisor who gets to tick the boxes, along the lines of 'No, here at Company Alpha we always demand liabilities to be maximum this, and that IPRs must be owned like this and that.' There is sort of a standard, and if it deviates from the standard, it does not move forward."*

To manage issues deriving from the large firms prioritizing themselves, the small firms have strategies to increase the large firms' commitment. One such strategy, mentioned by Interviewee D, is to demand significant upfront payments to ensure the large firm's engagement:

> *"The absolutely most important to us [when negotiating terms] was a large upfront payment [...] so, there, in a way, it creates commitment from their side. When they have paid so much, they are not going to just let it gather dust. Even large firms have a budget, so if they have put down a lot of money upfront, then they will want to do something with the innovation."*

Interviewee D further described how very large firms, almost as a prerequisite of negotiations, would put an ultimatum to the small firms to limit their negotiations to that single large firm as a means to control the competition without commitment. Interviewee F shared similar experiences, and it was managed by demanding an up-front payment to ensure commitment from the large company without promising anything but exclusive negotiations in return.

To encourage the large firm to prioritize the partnership, one strategy is to involve and convince all critical functions of the project's benefits. To do this, Interviewee B noted the importance of skillfully pitching to people from diverse professional backgrounds.

Finally, Interviewees C and E recommended that small firms should refuse unreasonable demands and instead seek alternative partners to ensure a win-win situation in all agreements.

4.3 Challenges and Management of Interorganizational Dynamics

4.3.1 Contractual Concerns

There was a consensus among the interviewees on the importance of creating mutually beneficial contracts. However, various challenges associated with contract formation were highlighted simultaneously.

Interviewee A emphasized that reaching an agreement on legal formulations of ownership in the contract is a common challenge. To manage this, the interviewee mentions that it is important to be flexible and simultaneously identify non-negotiable terms. On the same track, Interviewee E mentions that some dealbreakers posed by large firms are simply non-negotiable to them, and gives an example of an instance where they negotiated with a large firm for eight months without being able to compromise on an unfavorable exclusivity demand. Interviewee E summarized why they ended that negotiation:

> "*Either [the small firm] has such a unique product it will diminish the criteria or you decline the partner and move on.*"

Similarly, Interviewee C expresses the following reason for declining partnerships in connection with formulating the contract:

> "*They [large firms] want too much from us and we get nothing in return, there is no balance in the agreements.*"

Declining partnerships can thus both be a measure to manage contractual concerns and self-serving tendencies among large firms.

Regulating the partnership in a contract serves as a proactive management to avoid future disputes. Interviewee B underscored the importance of specifying milestones, royalties, and their amounts in the contract. Interviewee G emphasized including partner expectations on progress.

Interviewee E advised incorporating as many potential externalities as possible into the contract. Meanwhile, Interviewee C preferred minimizing agreement lengths, usually to no more than 5 years, to enable acquisition opportunities. Instead, they include a statement in the contract of the parties' intentions to prolong the contract. Interviewee A emphasized the ability to regularly update financial terms, for instance being able to change the selling price.

The ability to exit agreements if partners behave inappropriately was highlighted by Interviewees B, D, E, F, and G. For instance, Interviewee G suggested termination clauses addressing questions like:

> *“What will happen if we don't agree? What will happen if you say that now I don’t want this [the license] anymore?*”

Additionally, interviewee E pointed out that termination clauses can safeguard against large companies entering a licensing agreement with the intention of blocking competition.

Settling on a contract, the large firm typically lobbies for the use of its own template. Interviewee D would, however, advise the small firm to formulate their own template for the contract with the assistance of a lawyer, since large firms’ templates tend to favor the larger firm. Moreover, the interviewee means that it is common for large firms to accept the template of the licensor.

Interviewees B, D, and E address an issue of gaps in the contract, which according to interviewee B can occur after rapid negotiations. Interviewee E illustrated a pitfall where small firms fulfill uncontracted demands from large firms without compensation:

> *“Sometimes you can find yourself in situations where the big companies demand that you do things even though they are not stipulated in the contract. [...] and that means that you might have to do a lot of work because you are a decent partner, but which you then cannot invoice and get paid for"*

Interviewee D shared an experience where a small company accepted a retrospective change unfavorable to them, noting that large firms would never agree to such adjustments. Interviewee E emphasized the importance of having a solid contract but advocated for resolving disputes through direct communication:

> "*When negotiating [the small firm] should be prepared for an all-out warfare, but once the contract has been written, it should be locked in a cabinet, and then it should never be brought out again. Because as soon as you do that, you're toast, then you're in conflict*."

Another challenge addressed by Interviewees D and E is determining the jurisdiction for legal conflicts. It is highlighted that each party prefers the law of their own country, as it comfortably aligns with their legal team's familiarity. To settle on this, the interviewees strive for a neutral jurisdiction, such as Switzerland, Germany, or Singapore, where a domestic company is not favored by the law.

When negotiating the contract, Interviewees B, D, and E highlighted the extensive in-house legal teams possessed by large firms as a potential challenge. Interviewee D mentioned that it gives the large firm credibility during negotiations, while Interviewee B noted that the large firms' legal resources position them advantageously in potential conflicts. Interviewees B, C, and F pointed out that large firms' access to expertise and specialists in many fields further strengthens their negotiating stance, and could be experienced as overwhelming at meetings.

To counteract the substantial legal expertise of the large firm, Interviewees E, F and G emphasized the importance of hiring skilled negotiators and lawyers. Interviewee F recommends contracting a professional negotiator with substantial experience and a network in relevant large firms:

"[When negotiating with large companies] my number one tip is to not try to do this type of business by yourself; hire someone who is a professional at it. You'll get a much, much better deal and you'll have a completely different level of trust."

4.3.2 Uncertainty

The challenge of uncertainty has its core in trust, whether the parties can trust each other to work to both parties' benefit in an uncertain future. Most interviewees were adamant that the trust between the companies, and the people involved in the relationship, is key to success. Interviewee B emphasized:

"Business deals are not made by firms, business deals are made by people"

To foster trust and mitigate uncertainty, the interviewees described various strategies. Interviewee F managed uncertainty by hiring a professional negotiator to represent the small firm in negotiations, which ensured that the large firm played a fair game. Interviewees E and C underscored the importance of fulfilling promises to build and maintain trust. Interviewee E made it a point not to make unnecessary promises, to not fail to deliver. Interviewee C advised:

"You must deliver at the point in time you state you will deliver. This is most important because then you create trust."

To build trust, the relationship needs care. To be a good partner, Interviewee B pointed out that you need to understand the interests and needs of the other party, and Interviewee A and C highlighted meeting in person to get to know each other. Interviewee A further highlights publishing collaborative work to increase motivation, and Interviewee E emphasized communicating the small firm's limitations for realistic expectations. Interviewees B and C both mentioned the importance of providing technical support and assistance to the licensee.

During the interviews, challenges emerging from the large firms' uncertainty were also emphasized. One example, highlighted by Interviewee G, is how to convince the large firm that the licensed technology works without exposing the intellectual property. While trust goes a long way, Interviewees D and G described processes of due diligence to cope with this challenge, where a third party controls the small firm's technology that shall be out-licensed, to confirm accuracy for the large firm. To facilitate the review, Interviewee G recommends having a structured and clear data room. During any project, a solid, open flow of information in both directions was identified by Interviewees A, E, and F as a critical element to reduce uncertainty.

Another challenge emerging from the large firms' uncertainty is the future of the small firm. Large firms may worry about what will happen in the case of bankruptcy or acquisition of the small firm. In Interview A, the solution was to settle for an escrow agreement, where a third party holds a copy of crucial information for the technology and the licensee will assume ownership of this copy in the event of the small firm going out of business.

A challenge, described by Interviewees C, D, and E, is the uncertainty surrounding the true intent of the large partner. Interviewee C had experienced an instance where their partner intended to withhold royalties, further highlighting the importance of trust:

> *"[Once we] figured out that they want to use our technology in the development of new products where they can subsequently withhold royalties from us. [...] then the trust eventually breaks. They are not really playing with open cards but are trying to deceive us."*

Interviewee B expresses that there is uncertainty with licensing as a revenue model, as it is unsure when and how much the partner will sell. Interviewees D and E described how some large firms would license in a patent and either fail to invest the efforts required to develop and commercialize it or deliberately close the market of the licensed technology to favor in-house innovations. To combat this, the interviewees referred to control systems, and again, trust.

4.4 Challenges and Management of Small Firm Characteristics

4.4.1 Limited Influence

Attributable to the small firm characteristics was a challenge consisting of not being able to influence the large partner. Interviewee A gives an example of not having the influence they wanted due to being small:

> *"If we had been bigger and had higher [market] demand, we could have been a bit more demanding in terms of how we ensure that they do their job. [...] we couldn't set any counter-demands on minimum quantities [...] in previous jobs where I have been, we could be a bit tougher and say, you have to sell a certain number of products each year, otherwise, you're excluded"*

Similarly, Interviewee B perceives the small firm to have zero influence on the final decision of the large firm in some instances. Interviewee C highlights having limited influence over the large firm because they have a predetermined strategy for managing their investment projects, and there is nothing one can do to influence their strategy.

Furthermore, being dependent on the large firm leads to constantly being expected to meet their, sometimes unreasonable, demands. Interviewee D highlights this expectation:

> *"One could say that the small company with the innovation bears all the burden of proof against the large company, so we always have to ensure that they have what they are asking for."*

In Interview A, an instance was discussed where they accepted a large partner that did not purchase all complementary machines to utilize the technology:

> *"If we had been a large company, we might have considered saying 'No, if you want access to the technology, you have to buy the whole package.' But in this case, we were somewhat obliged to agree to do that part of the analysis ourselves at cost price"*

To increase influence over the large firm, Interviewee F suggests setting contractual requirements, for example, sales quotas, that will terminate the licensing agreement if not met. Interviewees A and B highlight that the small firm possesses specific expert competence that should be utilized to be more assertive in negotiations and demand influence.

To assert influence on the large firm in negotiations, interviewee E highlights hiring a skilled lawyer formatting a beneficial template for the small firm, and interviewee F underlines hiring a skilled negotiator to enhance the quality of the deal.

Another way to influence the negotiation process is by leveraging exclusivity, something highlighted in Interview A as a means of setting contractual demands. Interviewee F states that, to ensure the large firm's commitment, the small firm should demand a high up-front payment for agreeing to negotiate with them exclusively - if they pay, you know they are committed. Similarly, Interviewee C makes sure to calculate the estimated market value and demand that amount for granting exclusivity of a license. Interviewee E states that many small firms might opt for non-exclusive agreements, but that granting exclusivity leads to the large firm putting more effort into the partnership:

> *"If the partner doesn't have exclusivity, they might not put in all the effort that you wish for, so I would say that exclusivity is good."*

Interviewee F emphasizes that large firms have similar collaborations with multiple small firms and that it is necessary to be active in the partnership even after the contract is written because then you can make efforts to increase your influence. Interviewee F highlights that your influence is dependent on how much you educate, support, and push them. Interviewee C gave an example where they have increased their influence on the large firm by providing quality assurance of the licensee's products, making them dependent on the small firm.

4.4.2 Limited Independence

A common theme among the small firms represented by our interviewees is their financial dependence on the large firms they out-license to. For instance, Interviewee D serves as a business developer in a small firm negotiating an out-licensing deal that could constitute half of their future revenue. Similarly, in the company led by Interviewee C, out-licensing to two large firms represents 50% of their revenue. Additionally, the product launch window, as discussed in the inertia section, further binds these small firms to the timelines of large firms. This dependency not only leads to market delays when missed but also results in delayed revenue and disappointing shareholders according to interviewee C. Interviewee C also points out that large firms often seek long-term licensing agreements over a product's entire lifecycle, further enhancing the small company's dependency as they cannot exit the agreement during this period. Countering this, Interviewee C advocates for shorter licensing agreements of a maximum of five years, instead including in the contract intentions to prolong the agreement.

Interviewee D also notes a difference in the dynamics of out-licensing to large firms versus smaller ones, emphasizing that if contractual requirements are not met by the large firm, you as a small partner have a low incentive to withdraw from the contract, while large firms are normally more tough on that. Interviewee D exemplifies this dependence on the large firm:

> *"It's not like you can go there with a finger-pointing attitude and say, 'Now we're terminating the agreement'. Instead, you continue and hope that things will get better. But if it's a large company against a small one, then it can be tough. In that case, you might*

lose the agreement or face a penalty, having to pay damages for not fulfilling the contract."

Interviewee F brings up a situation facing publicly listed small firms. They are obliged to disclose significant events in the agreement due to regulatory requirements, unlike large firms for whom such events are often insignificant, emphasizing the limited independence for the small firm as the same event is not as significant for both.

For interviewee A, the licensing agreement with a large firm only accounts for a few percent of their revenues, but they point out a different kind of dependence. Their partnership with the large firm was crucial for obtaining a critical market certification. To mitigate reliance when that large firm didn't sell as much as they had hoped for, they diversified into direct sales, which originally was not a significant part of their business model. They stress the importance of a flexible business model and not granting exclusive licenses to maintain independence. Likewise, Interviewee C suggests demanding substantial payments for exclusivity, and if the partner is not willing to pay that, they might agree to a non-exclusive agreement. They also recommend allowing partners to use their own branding for the product in exchange for non-exclusivity and avoiding agreements that create unequal dependencies.

4.4.3 Partner Options

Interviewees B, D, E, and F mentioned the challenge of having limited options for partners. Interviewee B attributes this to small, innovative firms being a risky investment, making them less appealing for large companies to collaborate with. Interviewee D observes that many small firms are not in a position to decline offers due to financial constraints. Similarly, Interviewee E notes that small companies are rushed to get revenue, limiting their choice of partners, and Interviewee F points out the time-related dilemma in choosing partners, highlighting the need to avoid being too selective. Moreover, Interviewee E emphasizes the difficulty in granting market-specific exclusivity due to varying market attractiveness:

> *"We have a market, which is Europe, and Germany is the best country. [...] A potential partner might say, 'Yes, we can launch in Italy, Austria, Switzerland, Belgium, and France, as you wish, but then we want Germany.' Shit, we've already sold Germany to someone else, and then we miss out on these other markets."*

To attract more partners, Interviewee B suggests perfecting the art of pitching. Interviewee C allows the large firms to use their own branding on the small firm's products, thus enabling multiple out-licensing agreements within the same market. They also note that successful licensing agreements rely on mutual benefit and dependency. Interviewee D advises seeking alternative partners to increase interest from current prospects. Interviewee E points out that developing products as much as possible is crucial for attracting partners, as large firms prioritize time to market. They also recommend leveraging Search Engine Optimization (SEO) as an effective and cost-efficient strategy:

> *"We received so many inquiries through SEO that we had to shut it down, and they were of very good quality as well."*

Interviewee F underlines the benefit of hiring an experienced negotiator with a vast network in large firms to streamline the partner selection process. They also highlight the value of having proactive board members and having clear priorities in choosing the best partner for each situation.

4.4.4 Scarce Resources

The interviewees identified several challenges related to the limited resources of small firms. On the contrary, the very unique resources possessed by small firms out-licensing to very large firms were brought up in every interview. Interviewees B, D, and E highlighted their lack of extensive in-house legal teams compared to the large partner, leading to challenges such as an inability to win conflicts (B), legal competence asymmetry (D), and potential delays due to outsourced lawyers being preoccupied (E). Financial constraints were a common theme across interviews, often cited as a primary reason for out-licensing. Interviewee B noted that financial limitations put them at a disadvantage in potential conflicts, while Interviewee D pointed out that less resources could lead to unbalanced negotiations. Interviewee E commented on the financial demands of the pharmaceutical industry:

> *"If you're entering the pharmaceutical industry, it requires so much money that you can only really discuss with the big giants. There's no one else who can do it financially."*

Interviewee E further mentioned that entering into big out-licensing agreements could result in 'growing pains,' where a firm expands more rapidly than it can manage. Interviewee D emphasized the importance of contract length with producers, cautioning against long-term commitments to small-scale producers that may later hinder growth. Interviewee C discussed the lack of access to specialists in every field, unlike large firms, and Interviewee F noted that having fewer employees can create asymmetry in meetings when outnumbered by larger firms.

Interviewee A pointed out that possessing an attractive invention leads to increased negotiation power:

> *"It might sound a bit strange, you would think the opposite, that they should have the power since they are the larger party."*

Interviewees B and E advised leveraging one's expert knowledge and unique innovations in contract negotiations. Interviewee E observed:

> *"There are big challenges in being small in a world of large players, but there are also very big advantages if you have the right products and the right offering. And it's the same as always,*

need and demand, if you satisfy a need, you become very strong. Regardless of how big the opponent is."

Interviewee G noted no clear power asymmetry, because either the large firm wants what you have, or they don’t. Similarly, Interviewee C remarked:

"Since we know that there is no one else like us, we can be quite tough and bold in that situation."

Interviewee D observed that unique innovations foster greater commitment and quicker responses.

5. Analysis

In this chapter, the collected data will be analyzed in conjunction with the literature presented in the theory chapter. The chapter begins by analyzing and linking the identified challenges. It was observed in the empirical material that similar management strategies were employed to address different challenges. This leads to the introduction of the aggregated dimensions of the management strategies: Hard measures, Soft measures, and Unique resources, which will be analyzed through previous literature and connected to the challenges. The chapter concludes with the presentation of a dynamic model illustrating the relationship between the challenges and management strategies.

5.1 Challenges from Large Firm Characteristics

In the empirical material, the large firm characteristics of *Inertia* and *Self-serving* have been identified as challenges.

Previous literature notes that startups collaborating with large firms often face comparatively slow decision-making due to complexity, size, multiple management layers (Minshall et al. 2010), and bureaucracy (Usman & Vanhaverbeke, 2017) with respect to the small firm's reality. This aligns with the empirically identified challenge of inertia, where the interviewees emphasized slow decision-making processes and delayed responses. Doz (1988) points out potential misunderstandings arising from differing organizational cultures, with small firms struggling to adapt to the planning horizons, speed, and decision-making styles of large firms, aligning with the findings in this study. The interviewees mentioned a lack of understanding of the other party's way of working as a reinforcing factor of inertia.

Lechner et al. (2019) highlight the tendency of large firms to underinvest in the relationship once they have acquired the desired knowledge from small firms, a behavior that can be seen as a form of self-serving. Similarly, Minshall et al. (2010) underscore the power imbalance issue, where large firms might exploit their position by prolonging negotiations or hindering discussions with competitors, something that is also emphasized by Hora et al. (2017). Such practices were observed in the empirical data, e.g. described in the form of an ultimatum by interviewee D, intertwining the challenges of Inertia and Self-serving. This suggests a risk of exploitation for small firms, as also noted by Doz (1988). The interviews revealed various proactive measures to counteract this, indicating an underlying apprehension about such exploitation.

Self-serving becomes evident as well in the form of significant legal resources within the large firm, where empirical data show rigidity and risk aversion on their part, prioritizing their own requirements above the small firms. This is further supported by the findings of Minshall et al. (2010), stating that the legal counsel of the large firm would focus on minimizing risk to the large firm. Our empirical data indicates that this process significantly reinforces the inertia as the discussions may require multiple written exchanges between large and small firm legal departments as well as decisions from multiple levels of management not actively present in negotiations. The empirical data state clearly that the organizational structures are the perceived source of this issue. It is "brought to life" through the statement of Interviewee A that the small firm can make a decision within a meeting, whereas the other party often needs to report and request a decision from a higher level of management. This is again supported by Minshall et al. (2010), stating that it is *"very hard for large firms to make decisions at "start-up speed," due to their complexity, size and multiple layers of management"* (p. 56).

Further illuminating the self-serving is the issue of internal politics and project portfolio management at the large firm, for instance, indicated in the empirical data when a license was returned due to changing priorities, or when a product launch window was missed leading to an extra 6 months waiting until the licensor innovation reached the market. This is supported by the findings of Vanhaverbeke et al. (2017) where the small firm is dependent on the internal decisions of the large firm.

5.2 Challenges from Interorganizational Dynamics

The identified interorganizational challenges are *Contractual Concerns* and *Uncertainty.* As both parties try to address the uncertainty through contractual clauses, these two dimensions are bound together by the determination to establish a licensing agreement, creating the aggregated dimension of *Challenges from Interorganizational Dynamics*.

Small firms face the issue of being associated as uncertain for several reasons. As they often are young, single-product firms with little to no track record, and often no profitable sales as they aim to use licensing of their single product as their point of revenue, they suffer from a limited track record and low legitimacy in the eyes of the large firms (Das & He, 2006). In a technical respect, the small firm needs to cope with large firms' skepticism of the out-licensed product and their capabilities (Das and He, 2006), while maintaining the protection of the proprietary knowledge (Das & He, 2006; Bogers et al. 2012). Interviewee F told of difficulties marketing a product for licensing, as they could not elaborate on the product for risk of exposing too much detail, whereas Interviewee G spoke of a due diligence concern. In relation to the information paradox (Bogers et al. 2012), how could the small firm convince the large firm licensee of the efficacy of their product without transferring the knowledge? From a business perspective, the large firm's uncertainty pertains to the financial viability of the small firm and what would happen in the event of a bankruptcy or acquisition of the small firm. The empirical data show that this issue can take considerable effort from the legal team, as the eventualities of the uncertain future are many. This issue of the viability of the small firm links the factors of the challenge uncertainty firmly to the challenge of scarce resources in small firm characteristics - showing a clear interdependency between these aggregated dimensions.

The small firms also observe uncertainty as they in many cases effectively hand over control of their technology to an external party over which they have limited or negligible influence. In essence, the small firm is dependent on the external party to commercialize their licensed product. This dependency becomes a direct source of power for the large firm (Hillman et al.

2009), which, when anticipated by the small firm, leads to contractual concerns to balance this power.

If trust is limited between the parties, suspicion may grow of malicious intent. An example would be intent to block the technology from reaching the market, as shown as an alliance-making strategy with large firms identified by Das and He (2006), or simply neglecting to prioritize the development of the product so it never reaches the market, whether intentional or not. This connection intertwines the themes of uncertainty and contractual concerns with the self-serving theme discussed above, linking the aggregated dimensions of large firm characteristics and interorganizational dynamics together as mutually dependent.

In any event, as the future approaches, the gaps in the contract may become evident and are more likely if the negotiations are closed rapidly, according to interviewee B. The empirical data also indicate that experienced legal advisors on the matter are important to close such gaps, while the cost of such advice may prove costly, sometimes prohibitively so. This plays along well with the discussions of Vanhaverbeke et al. (2012), who point to the costs of IPR protection in partnership as a limitation for small firms due to scarce resources. This links challenges in interorganizational dynamics to the challenges from *Small Firm Characteristics*.

5.3 Challenges from Small Firm Characteristics

The challenges identified that stem from the characteristics of small firms include *Limited Independence, Limited Influence, Limited Partner Options,* and *Scarce Resources.*

The challenge of limited independence becomes apparent when examining the experiences of Interviewees C and D. Small firms often rely heavily on large firms for the commercialization of their technology, which is crucial for generating royalties, which at times constitutes the majority of the small firm's revenues. This reliance aligns with the resource dependency theory, suggesting that small firms, if in need of the large firms' financial resources, are heavily dependent on them (Hillman et al. 2009). Consequently, one could argue that small firms are effectively “locked” into the partnership, where licensing agreements often stretch over long periods of time. They are often unable to pursue legal action without risking financial harm to themselves and potentially damaging the relationship. Even if there is a justified reason to enforce a legal matter, the lack of financial resources, pointed out by Interviewee B, restricts small firms' possibility to enforce the legal case (Vanhaverbeke et al. 2012). This reasoning can be supported by Interviewee E's statement of actively choosing to avoid conflicts. Furthermore, it can help to understand the low incentive to withdraw from partnerships mentioned by interviewee D. This segment of analysis underscores the intertwined challenges across the dimension, *small firm characteristics*, where scarce resources are linked to the limitations in asserting independence.

Interviewee D raises the concern that they had to regularly provide a burden of proof in matters, which can be interpreted as a limitation to assert influence amongst small firms, due to the large firms' skepticism (Das & He, 2006). As such, the large firm can assert power to decrease its own concerns, at the expense of the small firm operating under unfair conditions (Hillman et al. 2009).

A recurring theme in the data is the difficulty small firms face in exerting influence during negotiations and within partnerships, as highlighted by Interviewees B and C. This issue can be connected with the fact that large firms often engage with multiple collaborations, a point made by Interviewee F. Consequently, large firms can be perceived as less dependent on any single partnership. With numerous licenses to consider, their prioritization of an agreement with a small firm may be deemed less critical (Hillman et al. 2009). This scenario leaves the small firm with limited influence to assert on the less committed large firm, reflecting the disparity in perceived importance mentioned by Das and He (2006). Additionally, Interviewee C's concerns about large firms missing product launch windows illustrate how small firms' revenues are closely tied to the internal strategic decisions made by larger firms (Hillman et al. 2009; Vanhaverbeke et al. 2017). This dependency is compounded by the small firms' inability to influence these strategic decisions, a frustration expressed by Interviewees B and C. Thus, small firms’ issue of limited independence and influence can be linked to the problematization of large firm characteristics, specifically regarding their internal strategic prioritization (self-serving) and the prolonged decision-making processes associated with inertia.

In Interview A, the interviewee mentions that their limited influence in negotiations was due to their small size and inadequate market demand. Considering the low market demand, the company was unable to increase its bargaining power by leveraging other potential partners, as suggested by Interviewee D. The insufficient market demand and inability to exploit potential partners in this scenario (Gambardella & Panico, 2014) can be interpreted as the small firm lacking legitimacy in its environment (Das & He, 2006), leading to diminished influence. Small firms' lacking legitimacy can be, stated by interviewee B, a matter of small firms' association with uncertainty, constructing the challenge of having limited partner options (Das & He, 2009). Again, linkages between the identified challenges in the dimension of *small firm characteristics* highlight the interconnectivity

The limitation in partner options emerges as an issue among many interviewees. It is important to recognize that small firms often lack the financial resources to form expensive contracts with new partners (Bogers et al. 2012). Additionally, given their time constraints to commercialize as quickly as possible, a dependency is created (Hillman et al. 2009). This binds the small firm to what is perceived as the "best possible option" to carry out the commercialization, a point underscored by Interviewees E, F, and D.

The perceived lack of resources among interviewees, especially human capital and access to legal representatives, complicates negotiation processes and communications with large firms. Furthermore, small firms are shown to not have enough resources to carry out the commercialization phase by themselves, relying heavily on finding a partner to do it for them, expressed across the majority exemplified through interview E (Vanhaverbeke et al. 2012; Radziwon & Bogers, 2019). Even though there is an interdependency between small firms and large firms in the life-science sector (Yan & Gray, 2002; Chesbrough & Ghafele, 2014), the small firm's "survival" is dependent on larger firms' resources to carry out the unique product of small firms (Das & He, 2006), which is not the case for the large firm having multiple prospects of small firms to invest in. As such, the small firm can be perceived to be overdependent on the larger firm (Minshall et al. 2010; Lechner et al. 2019). The dependency ratio is further strengthened by the time-dependency aspect discussed earlier in this segment. However, the analysis at a later stage will explore whether this asymmetry is as pronounced as suggested by earlier literature.

5.4 Management through Hard Measures

5.4.1 Navigating exclusivity

Navigating exclusivity is one of the main strategic decisions in licensing agreements (Bogers et al. 2012) and was frequently discussed in our interviews. Interviewees A and E noted that granting an exclusive license can enhance a small firm's influence over a large firm's practices, setting stricter contractual requirements and sales quotas, which aligns with Bogers et al. (2012) that exclusivity dictates the direction of negotiation and compensation. Interviewee F uses exclusivity in negotiations to ensure the large firm's commitment and engagement. This suggests that exclusivity can be utilized to filter out large firms with a high degree of self-serving.

However, there is literature suggesting that exclusivity might restrict small firms' growth and technology diffusion (Bian & Katila, 2019; Bogers et al. 2012). Opting for non-exclusivity, as emphasized by Interviewee A, allows small firms to penetrate the market, maintaining independence and control over their growth. Interviewee C also prefers non-exclusive agreements for broader market access. Non-exclusive agreements allow the small firm to have multiple partners in the same market, which could address the challenge noted by interviewee E regarding the decision of whom to grant access to lucrative markets. Noting the different outcomes of granting exclusivity or not, there seems to be a trade-off between increasing influence on the large firm and increasing independence as a small firm, which is partly dictated by the decision of exclusivity. Exclusive licensing increases influence but limits market opportunities, while non-exclusive agreements offer independence but potentially less influence on the large firm's operations.

Adopting an RDT perspective on this payoff, exclusivity can be viewed as a valuable resource held by the small firm, which the large firm wants or needs. This dependency of the large firm on the small firm, as described by RDT and Hillman et al. (2009), suggests that the small firm holds as much power over the large firm. Since power and influence can be synonymous, granting exclusivity increases the small firm's influence (allowing it to make demands). However, once exclusivity is granted, the small firm instead becomes dependent on the large firm's resources to commercialize.

5.4.2 Establish control mechanisms and regulations

Control mechanisms and regulations refer to management strategies mostly regulated in the contract, naturally tackling contractual concerns. These include integrating termination clauses (Interviewees B, D, E, F, G), enabling updates of financial terms (Interviewee A), thoroughly regulating as many uncertainties as possible in the agreement, (Interviewees B, D, E, G) establishing control systems and joint steering committees (Interviewees A, B, C, D, F, G) and regulating the transfer of ownership clearly. To successfully out-license, Lichtenthaler (2011) emphasizes the importance of establishing formal project teams and dedicated employees. These teams and employees, in a structured manner, are responsible for managing specific licensing partnerships. An example of such a structured approach is the formation of joint steering committees highlighted in the interviews.

Thoroughly regulating the partnership in a contract is a proactive measure to avoid future disputes and can be used both to increase influence on the partner and to maintain independence when entering a relationship. Minshall et al. (2010) emphasize a similar management strategy for startups collaborating with large firms, to document all interactions and changes as a precaution that could be critical against future disagreement.

Lechner et al. (2019) note that established firms might underinvest after acquiring desired knowledge from smaller firms. To mitigate this risk, small firms should regulate as much as possible and establish control mechanisms to have something to fall back on in case things go wrong. This can be interpreted as a way of increasing transparency, and thus decreasing uncertainty. However, as interviewee E pointed out, the goal is to never look at the contract again after signing it, as this implies problems in the agreement. Bian & Katila (2019) observe that the ability to implement control measures in asymmetric partnerships grows with increased bargaining power. This ties into leveraging unique resources and resource dependency theory (Hillman et al. 2009), as a small firm's success in negotiating favorable terms is often linked to the large company's need for its unique innovation.

When Interviewee G commits to having structured data documentation and organization in a data room for due diligence, it can be deemed an effective method to reduce the uncertainty associated with small firms by large firms in collaborations. This approach assists in verifying the technology's legitimacy for the partner, efficiently managing situations of secrecy, particularly when a third party is involved in the verification process. This strategy addresses both the uncertainty associated with small firms (Das & He, 2006) and the information paradox (Bogers et al. 2012), maintaining the confidentiality of the technology. Additionally, the use of an escrow agreement, as mentioned in interview A, is another method to resolve this paradox, addressing the large firm's concern about losing access to the implicit technology while allowing the small firm to keep its expertise confidential. These two examples illustrate effective strategies for maintaining implicit knowledge during negotiations with potential partners, thereby mitigating the risk of imitation (Doz, 1988; Das & He, 2006; Hora et al. 2017). One can argue that these strategies, maintaining knowledge implicit from the other party, function as a preliminary step in order for small firms to leverage their unique knowledge and assert influence in the negotiation process.

5.4.3 Decreasing dependency

Forming alliances and partnerships integrates the firms, inevitably leading to some level of interdependence. From the interviews, management strategies emerged aimed at reducing dependency on the large firms in situations where a dependence asymmetry was experienced. Aligning with the interview findings, Tsang (1999) notes that dependence asymmetry leads to power imbalance, while Gulati and Sytch (2007) explain that having mutual interdependence in partnerships reduces uncertainty and enhances overall performance.

To even up the dependency, Interviewee A advocates for utilizing a flexible business model, as seen in their expansion to additional revenue streams which was made possible by having non-exclusive licensing agreements. Minshall et al. (2010) also underscore business model adaptability in such partnerships, both when discovering partnership opportunities and when constantly reviewing it during the deal. Interviewee C highlighted opting for short licensing agreements in most instances to maintain exit options and flexibility. These approaches, along with rejecting unfavorable partners or agreements, can be seen as ways of increasing independence as a small firm. Further, decreasing dependency can address contractual concerns. In the interviews, examples of this are adapting a neutral law in the agreements, as emphasized by Interviewees D and E, and using the small firm's contract templates even though the large firm lobbies for their own.

There is a clear connection between dependency and power, as emphasized in RDT (Hillman et al. 2009). The initial step for a small firm to increase its power over the large firm is to recognize its dependency on the large firm's resources (if the partnership contains dependence asymmetry). Following this realization, the small firm can take measures to either amplify its power over the large firm (such as by using its own contractual template) or to reduce its dependency on the large firm (for instance, by opting for shorter licensing agreements).

5.5 Management through Soft Measures

5.5.1 Being Structured and Professional

To address the challenge of inertia, interviewees A, D, E, F, and G demonstrate a variety of measures that can be characterized as professional and structured approaches. Working professionally includes rapid response (E), being considerate of large firms' delays (A, F), and utilizing legal expertise to handle large firms' requests (G). A structured approach is evident in setting earlier deadlines for large firms (D), maintaining ready-to-go product registrations (E), adapting to and requesting expected response times (F), and establishing a systematic documentation process (G). These actions show how the small firm needs to adapt in order to collaborate with a large firm (Bian & Katila, 2019). Given the extensive experience of the interviewees, these actions can be connected to the findings of Usman and Vanhaverbeke (2017). Specifically, the ability of small firms to manage inertia is largely influenced by the prior experience of their managers.

Moreover, in coping with large firms' perceptions of small firms' uncertainty, adopting a professional approach is crucial. This involves ensuring timely delivery of what is agreed upon with your partner and communicating any limitations that might affect delivery. These practices, as mentioned in interviews E and C, are essential for small firms to maintain trust with their partners. By consistently fulfilling commitments and managing expectations transparently, small firms demonstrate their reliability and professionalism. Such an approach encourages large firms to stay committed to the partnership, combating the challenge of self-serving partners (Zaheer & Venkatraman, 1995).

5.5.2 Relationship building

Building strong and personal relationships with the large firms are recurring actions mentioned across interviews to foster the licensing partnership, which aligns with the literature (Zaheer & Venkatraman, 1995; Kale et al. 2000; Vanhaverbeke et al. 2012; Minshall et al. 2010; Forrest & Martin, 1992). The empirical material shows that relationship building is used to combat uncertainty, inertia, and the limited influence the small firm holds over the large firm. Uncertainty between the partners with regards to e.g. confidence in technology under scrutiny for licensing, good or malicious intentions, (in-)ability to deliver, and the likelihood of surviving long term in a competitive environment, is targeted by multiple efforts summarized as relationship building.

Measures taken to foster the relationship relate to efforts to build trust between the parties involved in a collaboration (Forrest & Martin, 1992). This strategy can function as a means to combat differences within the alliance (Das & He, 2006). For instance, the interviewees suggest making collaborative work, educational efforts, and having a steady flow of clear and consistent information to diminish large firms' skepticism of the small firms' capabilities and increase the chances of fruitful relationships.

It is a prerequisite for the small firm to acquire the relevant relationship management skills in order to understand the large firm (Minshall et al. 2010; Usman & Vanhaverbeke, 2017). This falls well into line with the relations discovered in the empirical data, where interviewees A, B, F, and G point to the need to know how the large firm works with its processes and the need for consensus to alleviate inertia effects (Interviewee G), open, trustworthy communications to reduce uncertainty (interviewee F), and knowing the people of the partner in question (Interviewees B) and educating them to increase influence (Interviewees A, F). These approaches are further supported by the findings of Minshall et al. (2010) where the small firm is encouraged to understand, educate, and engage to improve the relationship and gain from it.

Concerns regarding the uncertainty of large firms not delivering what is agreed upon were emphasized by Interviewees B, D, and E. Kale et al. (2000) and Zaheer and Venkatraman (1995) highlight that small firms' incentives to build trust and foster partnerships can serve as a measure to combat these concerns. Considering the interviewees' notions that contractual gaps are inevitable, relational capital becomes a supplementary method of dealing with these contractual gaps. As such, it can be said that, if the small firm misses or fails to hedge against certain challenges with Hard Measure strategies, they can at a later stage, work on building trust and personal relationships to manage challenges connected to partner-action uncertainty. Interviewee F's experience can be seen as an instance of the former when they, after realizing their partner's sales were not sufficient, went to educate the partner's sales team. The small firm created value for the partner and themselves through mutual benefits, an order of control and influence was established, and relational capital could be built.

5.5.3 Creating Commitment

Creating commitment involves strategies and actions that increase the large firm's dedication to the partnership. One approach, as Interviewee B emphasized, is skillfully pitching and convincing different stakeholders. This strategy can encourage the large firm to prioritize the partnership and decrease the effects of self-serving tendencies. Skillfully delivering the benefits of one's invention not only boosts interest in what the small firm offers but also attracts more partner options. From an RDT perspective, these kinds of skills can be crucial to make the large firm aware of a need for the small firm's invention, and therefore create a dependency (Hillman et al. 2009). Seeking alternative partners, which is emphasized by Interviewee D, showcases that the innovation is desirable, and was brought up during the interviews to increase commitment. Supporting this, previous literature indicates that having alternative partners enhances negotiation power (Gambardella & Panico, 2014). A committed large firm tends to prioritize the partnership internally, thereby addressing the challenge of inertia. When visions are aligned, disagreements are less likely to occur.

Creating commitment can also involve demanding significant up-front payments, as noted by Interviewees C, D, and F. Large initial investments from the large firm can "lock" them into the partnership, increasing the likelihood of sustained engagement, and lowering self-serving tendencies. Forrest and Martin (1992) and Das and He (2006) identify commitment as a critical factor in successful alliances between small and large firms, and one commitment that is mentioned is financial commitment, which strengthens the power of significant up-front payments.

5.6 Management through Unique Resources

5.6.1 Leveraging Unique Resources

Offering a unique innovation that the partnering large firm needs has been identified as a key strategy to overcome challenges, highlighted by all interviewees in this study. Leveraging unique resources effectively requires choosing the right partner who genuinely needs them. If the right partner is found, inertia issues in large firms will possibly not be as evident, because they will make sure to close the deal. This will also lead to increased bargaining power, as interviewees A and D note, and is therefore a sign of increased influence on the large firm.

With a resource dependency perspective, previous literature suggests that bargaining power is asymmetric in small-large firm partnerships, and factors influencing a firm's bargaining power in a partnership include the importance of the resources it contributes and the presence of alternative partnering options (Bian & Katila, 2019), which matches well with the empirical material.

Increased bargaining power can lead to more favorable contracts and deals, addressing contractual concerns. The interviewees highlighted the contrast between the small firm's scarce resources and the large firm's substantial ones, and how that could lead to challenging situations. The financial asymmetry is prevalent in most small-large firm partnerships, as there often is a financial motive to engage in licensing and open innovation from the small firm's perspective (Hora et al. 2017; Corvello et al. 2023). Previous research on collaborations between small and large firms tends to suggest opportunistic behavior from the large firm, a power play to capture more value from the relationship. Interestingly, this study showed a different side of such partnerships when the interviewees revealed a nuanced perspective on power dynamics. Despite the large firm's financial and legal resources, the unique resource offered by the small firm often balances the power dynamics.

5.6.2 Acquiring and Utilizing External Expertise

As opposed to leveraging unique internal resources, this management theme focuses on acquiring and utilizing external expertise. It involves strategically leveraging complementary assets and carefully prioritizing within a limited budget. Key practices include contracting skilled lawyers (Interviewee E) and professional negotiators (Interviewee F), working closely with legal advisors (Interviewee G), and appointing the right board members (Interviewee F). Interpreting this management strategy from a resource dependency perspective, utilizing external expertise can be seen as a method to acquire external resources, thereby reducing environmental uncertainty (Hilman et al. 2009). This environmental uncertainty could stem from the substantial expertise of the large firm and the uncertainty regarding its impact on the small firm.

While the importance of lawyers and contractual negotiations is acknowledged in the literature (e.g. Minshall et al. 2010), utilizing external expertise from outside of the partnership has not been portrayed as an explicit management strategy. Working closely with legal advisors, although not in-house, enables a faster response to the large firm, and can thus combat some inertia to some degree. This is emphasized by interviewee G who stresses the importance of managing inertia by responding promptly to the large firm and doing what is in their power as a small firm to speed up the process.

In contract negotiations, possessing expert knowledge through a negotiator or skilled lawyers positions you favorably to secure beneficial deals. This approach not only addresses various contractual concerns but also enhances your influence over the larger partner. Additionally, as Interviewee F emphasizes, contracting an industry professional can facilitate access to the right networks, thereby expanding your potential partner options.

5.7 Dynamic Model: Small Firms' Challenges and Management Strategies in Asymmetric Partnerships

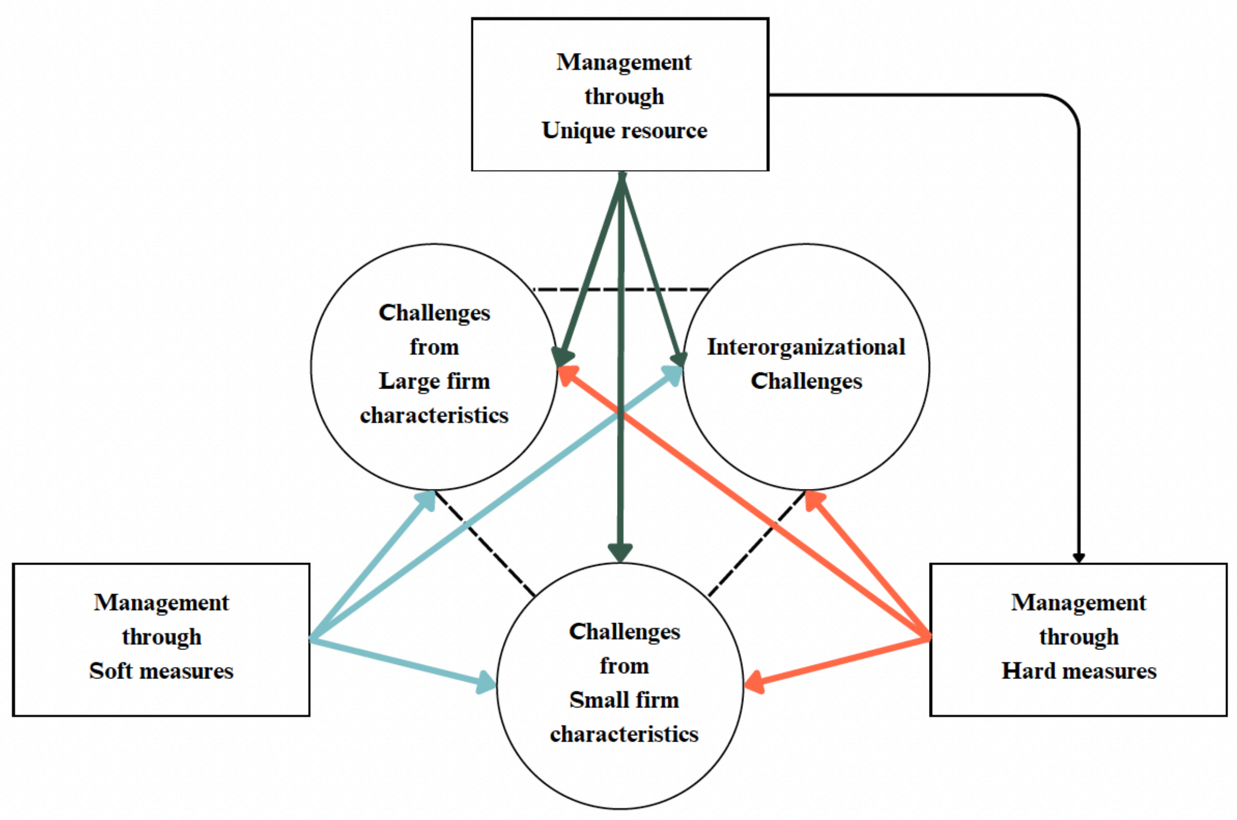

Figure 3: Dynamic model of small firms' challenges and employed management strategies in an asymmetric licensing partnership.

The dynamic model presented is based on the themes across the identified challenges and management strategies small firms experience, represented through their respective aggregated dimension. The researchers aim to help the reader understand the dynamics in a small to large firm licensing scenario, highlighting the interconnectivity between the challenges and the employed strategies through a simplified model.

Although the study wanted to showcase where the faced challenges derive from, the analysis argues for and highlights interconnectivity between the aggregated challenges. The connection between the aggregated challenges is represented by the black lines in the model, linking the challenges together.

Each arrow in the model represents how the aggregated challenge can be targeted by deploying a certain aggregated management strategy. The model shows that each aggregated strategy can target each aggregated challenge. This statement is covered in the analysis segment of management strategies, where the analysis demonstrates how different challenges are targeted by the same aggregated strategy. For instance, the strategy of relationship building, which is a part of management through soft measures, influences the challenges of *Inertia, Uncertainty, and Limited Influence*

Lastly, the analysis of the aggregated strategy of management through unique resources provides insights to demonstrate how the aggregated strategies can be connected. Namely, by leveraging one's unique resources, e.g. through utilizing external expertise, the small firm is rewarded with bargaining power, which can later be exploited in a hard measure strategy when negotiating to reduce uncertainty and contractual concerns in the interorganizational challenge dimension. The arrow in the model from management through unique resources to management through hard measures illustrates this relation.

6. Conclusion and Discussion

In this chapter, the findings from the analysis are summarized in relation to the study's purpose, and an answer to the research question is provided. Following this, the credibility and quality of the conclusions will be discussed. The chapter will also detail both theoretical and practical contributions and suggest directions for future research.

6.1 Conclusion

The purpose of this study was to examine the challenges small firms face when engaging in open innovation through out-licensing agreements with larger firms. Furthermore, it sought to understand how these small firms manage the encountered challenges and to explore the connections between identified challenges and management strategies. Consequently, the research question was formulated as follows:

What challenges do small firms encounter when engaging in open innovation by out-licensing to large firms, and how do they manage these challenges?

The empirical material consisted of seven interviews with people having expert knowledge and thorough experience in out-licensing from small firms to large firms. Along with the analysis and review of previous literature, the following challenges were identified:

Inertia, Self-serving, Contractual Concerns, Uncertainty, Limited Independence, Limited Influence, Scarce Resources, and *Limited Partner Options.*

Furthermore, the following categories of management strategies to address these challenges were identified:

Navigating exclusivity, Being structured and professional, Leveraging unique resources, Relationship building, Acquiring and utilizing external expertise, Creating commitment, Establishing control mechanisms and regulations, and *Decreasing dependency.*

The small firms' encountered challenges were aggregated into dimensions describing where they emerged from; Large firm characteristics, Interorganizational challenges, and Small firm characteristics. Additionally, the management strategies were aggregated into dimensions of Soft measures, Hard measures, and Unique resources. The study found that each of these aggregated management strategies, to varying extents, addressed each of the aggregated challenges. This led to a dynamic relationship where challenges and management strategies are highly intertwined.

In academic literature, collaborations between small and large firms are frequently referred to as asymmetric partnerships. Previous literature commonly portrays this asymmetry as placing small firms at a significant disadvantage in terms of power dynamics. However, while this study acknowledges that numerous challenges arise from the small firms' perceived disadvantages in certain areas, it also reveals that small firms often experience balanced power dynamics. This equilibrium is largely due to their possession of unique innovations, which are highly sought after by large firms.

6.2 Discussion

The challenges, management strategies, and relations discovered through this study are evident in the life science industry from which our sample was taken. The theoretical anchoring in the analysis is, however, not bound to this industry, and therefore the challenges and management methods applied are reasonable to generalize to a broader industry perspective, while not being exhaustive. An industry with well-developed licensing markets would perhaps be found to be more in line with the findings than one where licensing is the exception to the rule of business. Further challenges, which the study has not captured, may exist in other industries and if so, would render the conclusion non-exhaustive. On the other hand, the challenges and management strategies identified here are unlikely to be easily questioned due to the theoretical foundations on which they rest.

This study draws no conclusions as to the efficacy or the efficiency of each strategy in relation to the challenges. Neither have any efforts or conclusions been made regarding the ranking of the challenges with respect to importance or the strategies with respect to efficiency, as this was not the goal of the study. The analysis shows interrelations between the challenges and that each challenge can be addressed by multiple strategies. This limitation was expected from the choice of methodology. Any venture into this subject would have severely limited the generalizability of the results as different industries may have significantly different dynamics from the sample. While licensing is very common in life science, it is also worth noting that each license holds potentially very high monetary value when exploited. This lends the small firm licensor in the life science industry a significant bargaining chip in its unique resource to counter the power of the large firm, whereas for instance in the music industry, where licensing is also very common, the power balance may be very different between licensor and licensee.

As our sample is based on people's experiences of small-to-large licensing, the study has been limited only to this perspective despite several of the interviewees having experience in the opposite direction. This may have colored their views, but the authors made a deliberate effort during interviews to focus the contributors on the small-to-large perspective. An obvious downside to this focus is that the relationship as a whole is not illuminated. The strength growing out of this argument is that the study illuminates the small firm perception of the relationships - a subjective reality affecting relationships between the organizations, despite what the objective truth may be.

While conclusions with respect to the effectiveness of each management strategy cannot be drawn, common themes have been identified across the empirical data, permitting the evaluation of commonality and supporting formulation of hypotheses to be made for further investigations to further illuminate this subject from the perspective of the small firm.

6.3 Theoretical Contributions

The theoretical contributions of this study include a detailed analysis of open innovation through licensing from the perspective of small firms. Prior literature has primarily focused on the perspective of large firms, only briefly touching upon the implications of being a smaller entity in a partnership with a significantly larger player. Moreover, this study offers insights further into the collaboration process, whereas previous literature has largely concentrated on partner selection. The study reveals a substantial number of challenges that can emerge even after finding a partner. It demonstrates various categories of management strategies addressing multiple of these challenges. Previous literature states that most licensing agreements fail and become problematic to manage, and this area has limited research. Utilizing an expert-based method, this study contributes to a wide range of insights from both failed and successful licensing agreements. Furthermore, it provides a theoretical contribution by combining two previously separate areas of study: licensing and asymmetric partnerships. Finally, a simple and comprehensible dynamic model has been developed by integrating empirical material with existing literature, portraying the intertwined nature of challenges and management strategies in asymmetric partnerships.

6.4 Practical Contributions

This study focuses on small firms navigating the field of open innovation by licensing to much larger entities. It aims to provide an overview of management strategies for small firms to address challenges encountered in licensing agreements. During the search for interview objects, it was surprising to discover how many small firms aspire to eventually out-license to a large firm. Finding firms that have successfully achieved this proved far more challenging, indicating a concern that either few such firms have success or they are absorbed by a larger player.

To improve on a low success rate, it is the belief of the authors that this study can illuminate the challenges experienced by the small firms to the large firm alliance managers and business developers. It can enhance their understanding of the issues faced by small firms when interacting and thereby facilitate the creation of more mutually beneficial partnerships.

For the small firm manager contemplating such agreements, our most significant recommendation is to spend the resources early on to have expert assistance to assist in legal matters, both with respect to securing the innovation through IPRs and in negotiating fair and beneficial terms. While the business terms of the contract appear fairly straightforward and related to the core business of the small firm, the legal issues are far more complex to the uninitiated. A solid patent and a licensing contract with good coverage of contingencies to parry unexpected developments of the uncertain future are likely to make the future far brighter if the findings of this study are to be believed. Also remember:

> If a large firm is sitting down because they want what you, and something only you can provide, they have to play ball with you.

6.5 Future Research

The outcome of this study has provided some insights into what the small firm perceives as challenges pertaining to licensing technology to a large firm and how they appear to reduce the impacts of these challenges. As was expected at the outset, given the methodological design of a qualitative study, a number of unanswered questions have been identified.

With knowledge in hand of what strategies are employed, the question remains as to whether the strategies have actual effect and if some are more efficient than others. Do small firms employ their scarce resources where they are likely to get maximum return on investment when establishing and nurturing license partnerships, or should they reconsider where to invest their efforts? This would require a far more extensive investigation than the scope of this thesis and it could utilize a quantitative approach to determine such rankings of efficiency. An investigation into the popularity of the strategies applied would also be of interest.

A second theme that would be welcomed by the authors would be a further investigation across a broader set of industries, nationalities, and cultures to determine if the perceived challenges are in fact general, and whether the strategies are employed generally. Such a study could validate, or limit, the extent of generalizability of the findings in this study. Might other industries where licensing of IPRs are common, for instance, the entertainment industries, be very different? How about industries where licensing is not as common? How do the challenges and management strategies persist when examining cross-cultural differences?

The authors would also like to acknowledge that large firms also take measures to enhance collaboration, and specific actions to prevent, or at least limit, small firms' frustrations regarding large firms' inertia (Minshall et al. 2010). As such, future research could investigate and evaluate how fair the relationship is between the parties, based on the efforts they put into fostering the licensing partnership.

Lastly, the study at an early stage also aimed to investigate potential differences between the types of out-licensing. However, considering the clustering of experiences in the data, making clear distinctions on faced challenges and employing management strategies between licensing types was evaluated as unfeasible. Thus, the authors would like to highlight the perspective for future studies to examine, potentially in-depth analysis through case studies.

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8. Appendix

8.1 English interview guide (translated)

Introduction

Hi! We appreciate you for allocating your time to an interview with us, thank you. Before we begin, we want to tell you that all material from the interview will be anonymized, that is your name, names of companies, the time/dates, etc. We would also like to ask to record the interview in order to ensure that we interpret your answers correctly. Only the three of us will have access to this recording, and you can, of course, take part of the transcription afterward if desired. Is this okay with you?

This interview aims to investigate what challenges small companies face when they out-license their knowledge/technology to large companies, as well as how the small company manages these challenges. You have significant experience from multiple companies, so we would appreciate it if you base your answers on your most relevant company.

Definitions

Large companies: In this interview, a large company exceeds 249 employees. If the participant prefers to not share companies' names, an estimation of the number of employees is appreciated.

Collaboration/licensing partnership: When small companies out-license their technology/knowledge/product to a large firm.

Licensing: In the interview, licensing refers to the out-licensing of knowledge/technology/products acquiring some sort of compensation, e.g. royalties. An out-licensing partnership is an agreement that one actor signs off their rights to a certain patented or non-patented knowledge, under a specific period of time.

Demographic information about the interviewee and organization

What is your job title at [Company]?

How long have you been working at [Company]?

Describe the company's overall operations and what work you do in the organization.

- How many employees are in the company?
- Give a rough estimation of the company's turnover.

Does or has the company worked with out-licensing to large firms?

- How many of these licensing agreements have you worked with? / How many licensing agreements has the company had?
- Can you estimate the number of employees of the licensing partner, or what is the name of these licensing partners?
- What previous experience do you have from out-licensing agreements with large firms? How many and how long were these?

Description of a specific out-licensing partnership

Now, we want you to think about a specific out-licensing partnership with a large company that is representative of your experience. If you want, you can take a few minutes to draw a timeline of the partnership and note certain highlights, affecting the partnership, otherwise we can continue right away. We also want to emphasize that we are most interested in how the partnership evolved rather than technical details, for example, you can think about the dynamics of the partnership, the balance of power, the communication between you and means of control.

Describe the origin of a specific licensing agreement.

Chronologically recount the milestones or significant events during the course of the collaboration.

- Were there specific challenges associated with these milestones?
- How did you manage these challenges and the collaboration in general?

How dependent did/do you feel your [Company] was/is on this collaboration?

- In what ways was/is this evident?
- Are there certain partners that are more important than others? In what way?

How dependent did/do you feel the large company was/is on the collaboration?

- In what ways was/is this evident?
- If the collaboration has ended, how did it conclude and why?

What lessons have you learned from this collaboration and how has it influenced your strategy in future licensing collaborations?

Supplementary: General Questions about Licensing Collaborations

How important is out-licensing in your business model and for your total revenues?

What are some important factors in choosing a partner for a licensing agreement?

- Do these differ between small and large companies?

Supplementary: General Questions about Challenges and Managing Challenges in Licensing Collaborations

Do you feel there are challenges before forming a licensing collaboration with large companies?

What challenges do you perceive arise/have arisen in licensing collaborations with large companies?

- How do these challenges evolve over the course of the collaboration?
- Do the mentioned challenges differ in duration?
- What is your understanding of where these challenges originate from?

How do you feel the large companies affect your operations?

How do you manage the various challenges that arise as a result of licensing collaborations with large companies?

- Is there any challenge that has been/is particularly difficult to manage?
- Do you feel the partner is aware of the challenges you are facing?
- Do they assist and help you in any way?

After all the questions are completed, we will ask if they have any additional information they would like add. Subsequently, we will express our sincere gratitude for their contributions and for generously dedicating their time to our study.

8.2 Swedish interview guide (original)

Introduktion

Hej! Stort tack för att du ställer upp på en intervju med oss. Innan vi börjar vill vi berätta att allt material från intervjun kommer att anonymiseras. Vi skulle även vilja be om att få spela in intervjun för att kunna säkerställa att allt återges korrekt. Det är endast vi tre som kommer ha tillgång till detta, och du får självklart ta del av materialet i efterhand om så önskas. Är detta okej?

Denna intervju syftar till att undersöka vilka utmaningar små bolag möter när de ut-licensierar sin kunskap/teknologi till stora bolag, samt hur det lilla bolaget hanterar dessa utmaningar. Om det inte är på din befintliga arbetsplats som du har erfarenhet av detta, så ber vi dig att svara på frågorna från perspektivet av bolaget eller bolagen som är mest relevanta.

Definitioner

Stora bolag: Med stora bolag avses i intervjun sådana med minst 249 anställda. Om den intervjuade inte vill dela med sig av namnet på företaget, så är en gedigen uppskattning av antalet anställda tillräckligt.

Samarbeten/licenssamarbeten: Med samarbeten och licenssamarbeten avses i intervjun sådana där det lilla bolaget i fråga ut-licensierar kunskap/teknologi/produkter till ett stort bolag.

Licensiering: Med licensiering avses i intervjun utlicensiering (om från lilla bolagets perspektiv) av sin kunskap/teknologi/produkter mot ersättning i form av up-front payments, milestones och/eller royalties. Med utlicensiering menas att efter överenskommelse överlåta delar av värdekedjan under en fast tidsperiod, licensen kan både avse patenterade produkter/processer eller icke-patenterade.

Demografisk information om den intervjuade och organisationen

Vad är din befattning på [Företag]?

Hur länge har du arbetat på [Företag]?

Beskriv den huvudsakliga verksamhet som [Företag] ägnar sig åt och din roll i organisationen.

- Hur många anställda finns det i organisationen?
- En grov uppskattning - hur stor är organisationens omsättning?

Jobbar eller har [Företag] jobbat med utlicensiering till stora bolag?

- Hur många av dessa samarbeten har ni haft?
- Kan du uppskatta storleken på dessa bolag i antalet anställda, alternativt om ni vill säga bolagsnamnen?
- Har du några tidigare erfarenheter av licenssamarbeten med stora företag? Hur många och hur länge?

Beskrivning av specifikt licensförhållande

Vi vill nu att du tänker på ett specifikt ut-licensieringssamarbete med ett stort bolag som är så representativt för hur ni jobbar som möjligt. Om du vill kan du ta några minuter att skissa upp samarbetet på ett papper som en tidslinje, eller så fortsätter vi direkt. Vi vill även betona att vi är *mest intresserade av utvecklingen av partnerskapet snarare än tekniska detaljer, exempelvis kan du tänka på relationsdynamiken, maktbalansen, er kommunikation och styrmedel.*

Berätta om uppkomsten till ett specifikt licenssamarbete.

Berätta i kronologisk ordning om milstolpar eller viktiga händelser under samarbetets gång.

- Fanns det specifika utmaningar kopplade till de olika milstolparna?
- Hur hanterade ni dessa utmaningar och samarbetet generellt?

Hur beroende upplever/upplevde ni *ert* [Företag] vara av detta samarbetet?

- På vilket sätt märks/märktes det?
- Finns det vissa partners som är viktigare än andra? På vilket sätt då?

Hur beroende upplever/upplevde ni att det stora företaget är/var av samarbetet?

- På vilket sätt märks/märktes det?
- Om samarbetet avslutats, hur avslutades det och varför?

Vilka lärdomar har ni dragit från detta samarbete och hur har det påverkat er strategi i framtida licenssamarbeten?

Komplettering: Generella frågor om licenssamarbeten

Hur viktigt är utlicensiering i er affärsmodell och för era totala intäkter?

Vad är några viktiga faktorer i valet av partner i ett licensieringsavtal?

- Skiljer sig dessa åt mellan små och stora bolag?

Komplettering: Generella frågor om utmaningar och hantering av utmaningar i licenssamarbeten

Upplever du att det finns utmaningar innan bildandet av licenssamarbete med stora bolag?

Vilka utmaningar upplever du har uppstått/uppstår i licenssamarbeten med stora företag?

- Hur utvecklas dessa utmaningar under samarbetets gång?
- Skiljer sig de nämnda utmaningarna varaktighet?
- Vad är din uppfattning att dessa utmaningar härstammar från?

Hur upplever du att de stora bolagen påverkar er verksamhet?

Hur hanterar ni de olika utmaningarna som uppstår till följd av licenssamarbeten med stora bolag?

- Finns det någon utmaning som är/har varit speciellt svår att hantera?
- Upplever du att samarbetspartnern vet om utmaningarna ni står framför?
- Assisterar och hjälper de er på något sätt?

När intervjun är klar kommer vi att fråga om de har någon ytterligare information de vill lägga till. Därefter kommer vi att uttrycka vår uppriktiga tacksamhet för deras bidrag och för att de generöst ägnat tid åt vår studie.